THE
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COMPRISING TEN VOLUMES ON THE YEAR'S PROGRESS IN MEDICINE AND SURGERY

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VOLUME VIII.

MATERIA MEDICA AND THERAPEUTICS
PREVENTIVE MEDICINE
CLIMATOLOGY

EDITED BY

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MATERIA MEDICA AND THERAPEUTICS

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MATERIA MEDICA AND THERAPEUTICS.

Acetone. G. Gellhorn,[1] of St. Louis, recommends the use of acetone as a valuable palliative remedy in *inoperable uterine cancer,* as it destroys the distressing odor, checks the hemorrhage and improves the general condition. Its use was suggested by the employment of this drug in laboratory work for hardening tissues. If the ulcerated surface could be hardened during life, Gellhorn assumed that the discharge could be checked until the escharotic surface could be thrown off and the process might be repeated for deeper and deeper portions. The treatment should begin with thorough shelling out of the ulcerating area. The curetted cavity is thoroughly dried with cotton sponges, the pelvis raised, and from ½ to 1 oz. of acetone is poured into the wound through a tubular speculum. The narcosis is then interrupted and the patient left in the same position for from fifteen to thirty minutes. Then, by lowering the pelvis, the acetone is permitted to run out through the speculum, and the cavity is packed with a narrow strip of gauze soaked in acetone. The healthy mucosa of the vagina and vulva are cleansed with sterile water and dried. Beginning on the fourth or fifth day after the operation, the process of applying the acetone is repeated two or three times a week, without narcosis, and as the cavity decreases in size a smaller and smaller speculum can be used. The treatment almost immediately checks the discharge, which, with its odor, gradually disappears. The hemorrhages fail to recur, and with the cessation of the drain on the system the general condition improves. The treatment causes no special pain, but anodynes may still be necessary for that due to the deeper extensions of the cancer. Urinary examinations

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(1) Jour. Am. Med. Assoc., April 27, 1907.

so far have given no evidence of absorption of acetone. Two cases are reported showing the value of the treatment when other treatment had failed.

Acetozone. Charles May,[1] London, believes that most of our cases of *iritis* are the result of bacterial action, and that the inflammation is due to the action of toxins with which the aqueous humor is laden. He believes that a foul condition of the intestinal tract leads to autointoxication, and that this condition is responsible for the long continuance of the inflammation. To combat this last named condition he uses acetozone. He administers a 3-grain capsule of this drug after the patient has drunk a tumbler of water, after which the patient walks briskly for ten minutes and then drinks a second glass of water and again walks ten minutes. This first dose is taken before breakfast, and the second in the middle of the morning, the third in the middle of the afternoon, and the fourth in the evening. If the case is seen before the fourth day, relief from pain is usually experienced in a few hours, and the ocular redness disappears on the sixth or seventh day. His local treatment consists of atropin and dionin. The average case of iritis is a very painful affection which lasts about thirty days, and in many cases no very clear etiology is in evidence. Of late we have been leaning more and more toward the state of the intestinal canal as a possible causative influence. Autointoxication is undoubtedly a more potent factor in the causation of many of our ocular inflammations than we have suspected. The author claims that in acetozone we have an intestinal antiseptic which acts quickly and with great vigor. It is a drug that we might well give a trial.

Acetosalicylic Acid. A case history is detailed by E. C. Ibotson,[2] whose patient was a thin anemic girl of 16 years. presenting the usual features of *rheumatic endocarditis* and being in a condition of extreme debility. Acetosalicylic acid was used in 15-grain doses, when the temperature showed a tendency to rise. It was later continued in 7-grain doses thrice daily. In the author's view, the case seems to point out the superiority of this particular acid in rheumatic fever when the salicylates have been tried

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(1) Medicine, October, 1906.
(2) Lancet, March 16, 1907.

without positive and permanent effect. He does not overlook, however, the value of the opium and blisters used in this special case. For a ferruginous tonic following the acute symptoms, hemoglobin is less liable to produce relapse than iron salts in combating the subsequent anemia. He has found that salicylates aggravate epistaxis, which, in his experience, is not by any means an uncommon concomitant of rheumatism, and is probably due to the accompanying anemia. It is important that the acetosalicylic acid should not be given in tabloid form unless the tabloids are crushed before administration. The powder suspended in water with a little mucilage acts well and has no unpleasant taste. He has not found acetosalicylic acid produces headache or dyspepsia, but he thinks that it is contraindicated in chronic rheumatism occurring in the subjects of organic heart disease of nonrheumatic origin.

Adrenalin. J. L. Miller,[1] Chicago, discusses the physiologic action and therapeutic use of the active principle of the suprarenal gland, using the name "adrenalin" as a general term, as all the trade preparations have the same effect. Its action, in general, simulates that of electric excitation of the sympathetic, and it is at present generally conceded that this action is a peripheral one, affecting the neuromuscular function. The most important action is on the cardiovascular system; a 3-minim injection of a 1 to 1,000 solution into a vein causes a brief rise of blood pressure of from 40 to 80 mm. of mercury. This increase is due partly to vasoconstrictor effect, partly to the direct accelerative action on the heart. In the various vessels the constriction is proportional to their sympathetic innervation. The coronary vessels are said not to be affected, according to Schafer, and the therapeutically important question as to the effect on the lesser circulation of the lungs is yet somewhat in dispute. Very large doses given by the mouth have no demonstrable effect on the cardiovascular system, and local application to the mucous membrane has usually no constitutional effects. Miller has observed, both experimentally and clinically, a marked rise of blood pressure after subcutaneous injection, though the general opinion has been to the contrary. Intramuscular

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(1) Jour. Am. Med. Assoc., May 18, 1907.

injection is always followed by a rise, less prompt, but more lasting than that after intravenous injection, and it is only with these two methods that the phenomenon is constant.

In cardiovascular conditions its greatest therapeutic field is in cases in which there is marked vasodilation with good heart muscle. The latter is important. Such conditions occur in chloral poisoning, shock and heart failure in chloroform and ether anesthesia. In chloral poisoning and in shock he advises continuous transfusion of a 1 to 50,000 or 1 to 100,000 physiologic salt solution as preferable. In chloroform or ether heart failure a single injection of 10 minims of the 1 to 1,000 solution of adrenalin should suffice. In heart failure of acute infection the problem is different. Vasomotor paresis probably plays an important part here, and there is also a degenerated heart muscle and the necessity of keeping up the circulation, not for a few minutes merely, but for hours, and even days. If adrenalin is ever allowable in these cases it should be given subcutaneously, as the increase of pressure is then more gradual. Miller also condemns the use of this preparation in pulmonary edema as unsafe except in cases where it can be locally applied. He does not advise its use as a hemostatic. He has seen it confer immediate and complete relief in the attacks of bronchial asthma, and from tests with other substances he is convinced that this was due to the specific action of the drug. In none of the cases, however, did he see any curative effect as regards the recurrence or intensity of the attacks.

As serious cardiac disturbance has been observed in some cases with this use of adrenalin, he advises that it be restricted to patients with good heart and blood vessels. Barr's results in the treatment of pleural and peritoneal effusions are noticed. The dangers of adrenalin are, besides those already mentioned, rupture of an artery from increase of pressure, glycosuria and arterial degeneration. It is a dangerous remedy in elderly persons, both on account of atheroma of the vessels and myocardial degeneration, and it should be used only with great care whenever there is any suspicion of disease of the vessels. The danger of glycosuria is slight; and the fact that atheroma can be produced in rabbits, who are specially prone to such changes, does not prove that man is equally liable. This danger, therefore, can be easily overestimated, and while the continuous intravenous use of the drug should be discouraged, it is not probable that a single injection would do harm in this way. The real danger attending the use of adrenalin is immediate cardiac disturbance, especially acute dilatation.

In Hematuria. Young[1] says that great importance should be given to apparently causeless hematuria, and that it should not be allowed to run on indefinitely without due efforts being made to determine the etiology. For this purpose bilateral ureter catheterization should always be done. The double ureter catheterization cystoscope of Casper has proved the most effective instrument for the purpose in the author's hands, but the new Nitze instrument is perhaps easier to manipulate. The operation can be done under local cocain anesthesia (4 per cent. cocain in bladder and urethra), generally with little pain and without much difficulty. Enough urine should be collected for a careful urinalysis, and a comparison between the separate specimens and the combined urine voided immediately before catheterization made. He is convinced of the importance of attempting to stop hemorrhage by the injection of adrenalin through the ureteral catheter. The excellent result which was obtained proved conclusively its therapeutic value in certain cases, and it is practically free from danger. Even in cases where a definite lesion, such as nephritis or renal tumor, may be present, the use of adrenalin would not seem to be contraindicated; in fact, it may prove of great diagnostic value.

It would seem probable that, in cases of nephritis, if the hematuria ceased after the use of adrenalin, a better opportunity would be afforded for carefully examining the urine and determining the presence of a nephritis; and it is possible that the hemorrhage, with its marked weakening effects, might completely disappear, even though the nephritis persisted. In the case of renal tumor its use would not be contraindicated, because if the hemorrhage was due to ulceration of the new growth into the urinary passages it would promptly recur, so that the use of adrenalin would

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(1) Jour. Am. Med. Assoc., May 18, 1907.

not greatly delay an exploratory operation to determine the exact nature of the lesion. On the other hand, if a neoplasm was suspected, the subsequent ureteral catheterization when the urine is free from blood would give a far better opportunity to study the relative value of the urine from the two sides and by functional diagnosis aid in the recognition of marked renal impairment on the bleeding side, a finding which would be suggestive of tumor.

In Uterine Hemorrhage. L. Peters[1] uses a 1 to 2,000 to 1 to 3,000 solution of adrenalin on an applicator within the uterine cavity to control hemorrhage after curettement, especially in cases in which he purposes to introduce a 30 per cent. formalin solution as a caustic. He has also found it of value in cases of metrorrhagia, especially when combined with solutions of suprarenal capsule. He recommends it also in cases of chronic urethritis, but regards it as especially valuable in vulvitis and pruritis, even when quite acute. He applies solutions of from 1 to 1,000 to 1 to 3,000 to the vulva, allowing them to remain in contact with the parts from two to five minutes.

In Snake-bite. Ferguson[2] contributes a paper in which he advocates the use of adrenalin in snake-bite. His treatment consists of adrenalin chlorid, hypodermically, in sufficient doses and often enough to strengthen and sustain the heart until the poison is eliminated; opium in some form for the pain—the better way would be to administer morphin hypodermically in half-grain doses at first, if the patient be an adult. The wound should be incised several times and injected with a strong solution of potassium permanganate for the purpose of eliminating any poison that may be unabsorbed in the tissues contiguous to the wound.

Rattlesnake venom is deep green in color, has a very high specific gravity, and is comparatively slow of absorption, hence the necessity of incision and injection of permanganate. However, when the fangs enter an artery or vein its toxic effect is almost instantaneous. The permanganate solution is chemically incompatible with snake venom, and decomposes all the venom that comes in contact with it in the tissues and blood.

The adrenalin chlorid solution (adrenalin chlorid 1 part

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(1) Med. Rev. of Rev., March 25, 1905.
(2) Texas Med. News, November, 1906.

in 1,000 parts of physiologic salt solution, with 0.5 per cent. chloretone) should be administered in small doses and frequently repeated until its physiologic effect is obtained, after which it should be administered just often enough to maintain its physiologic effect. It is the effect of the venom circulating in the blood that we counteract by giving adrenalin chlorid. It can be given in larger doses and repeated oftener in snake-bite, because snake venom neutralizes the action of morphin. Until antivenene or some other potent remedy is produced, our main reliance in treating snake-bites of all kinds lies in the early and careful administration of adrenalin chlorid solution in conjunction with other appropriate remedies.

In Asthmatic Dyspnea. W. F. Wagner,[1] of Washington, D. C., writes concerning the use of suprarenalin solution for the relief of the distressing paroxysms of dyspnea in bronchial asthma. He administers, hypodermically, from 2 to 10 drops of the solution diluted in from 10 to 20 drops of physiologic salt solution or sterile water. He states that in a few minutes the distressing shortness of breath is relieved and the patient is able to breathe in a perfectly normal manner. Dr. Wagner finds that when given by the mouth the same results are not experienced. One injection may give complete relief, or it may be necessary to repeat the dose in from eight to twenty-four hours. This treatment relieves the paroxysm, but no curative effect has been observed. To guard against accident, it would be well to commence with a small dose, as some patients are more susceptible to the drug than others.

African Arrow Poison. Lewin[2] has been studying certain arrow poisons used in Africa, and has found that the active principle of the *Acocanthera schimperi* and *A. deflersii* has a marked action on the heart. It induces much stronger systole, thereby filling the arteries better and raising the blood pressure. Stadelmann relates experiences with it in the clinic which have confirmed the results of experimental and pharmacologic research, demonstrating, he thinks, that it is an effectual heart tonic, worthy to rank with digitalis, acting on the diseased heart in the same way as the latter. The active principle seems

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(1) Jour. Am. Med. Assoc.
(2) Berliner klin. Woch., XLIII, No. 50.

to be very durable, as the amount used has been extracted from wood that had been cut for years. In this it has the advantage over digitalis. It has the further advantage that it can be injected subcutaneously without by-effects. The active principle in its crystallized form has been given the name of "ouabain."

Albargin. Bornemann[1] reports on the treatment of *gonorrhea* with gelatose-silver (albargin) in Max Joseph's polyclinic in Berlin: "It appears important that an organic silver compound should be prepared which possesses the nonirritant properties of the albumin compounds of silver without lacking the dialysing properties of silver nitrate. Such a compound is represented by gelatose-silver, a double compound of silver nitrate with gelatose. The therapeutic results bear out its favorable chemical and physical behavior. Gelatose-silver meets all the requirements which are demanded from a gonorrheic antiseptic. It kills gonococci, when it reaches them, without causing severe irritation of the tissues. As a rule, 0.2 of 1 per cent. solution is employed, but if symptoms of severe inflammation are already present the solution is at first diluted to 0.1 to 0.15 of 1 per cent. The patient makes injections with the solutions in the usual way, at first four or five times daily, and subsequently in combination with an astringent thrice daily. When the gonococci have permanently disappeared, albargin may be replaced by silver nitrate, or only an astringent employed. The favorable action of gelatose-silver varies according to the stage of the gonorrheic process and the number of previous infections. In uncomplicated cases which came for treatment in the second stage, gonococci very promptly disappeared. One patient, for instance, had been kept in a local institute for eight weeks, being prescribed quietness and diet, and had been treated with an astringent. The scanty purulent secretion swarmed with gonococci. After the first irrigation with albargin the gonococci definitely disappeared. Another patient infected for the third time, and with a filiform stricture, came under treatment; the gonorrhea had existed for about four weeks and had not been treated. The urethra bore the irrigations without reaction, and the gonococci disap-

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(1) Therap. der Gegenwart, March, 1901.

peared after the second irrigation." Altogether 60 cases were treated, 27 cases of primary infection and 23 cases of secondary, or polyinfection. Eighteen of these patients suffered with posterior urethritis, with complications of the neighboring tissues; in the remaining 42 cases the gonococci disappeared permanently—after one day in 2 cases, after two days in 5 cases, after three days in 4 cases, etc., the most resistant being cured after 39 days.

Alcohol. Hall[1] gives the following summary of this subject as he sees it:

The Effect on Nutrition. The first question that arises in this connection is an old one: Is alcohol a food? Ethyl alcohol possesses several characteristics in common with the carbonaceous foods, *e. g.*: 1, It is composed of C, H and O; 2, it is readily oxidized in the liver, yielding CO_2 and H_2O, which are excreted; 3, it yields heat incident to its oxidation, and this heat naturally augments the body income of heat; 4, ingestion of ethyl alcohol leads to a decrease in the catabolism of carbonaceous foods and may even "spare" proteins.

In this connection one must not lose sight of the following facts:

1. All vegetable toxins and alkaloids are composed of the same kind of chemical elements as enter into foodstuffs, viz: C, H, O and N.

2. Toxins and alkaloidal poisons in general are oxidized in the liver, through the agency of oxidases, whose function is to oxidize and thus to make harmless substances which would act as protoplasmic poisons on all cells with which they come in contact. When moderate amounts of such toxins are taken the defenses of the system are sufficient to reduce them to a harmless condition, and no immediate injury results. If larger quantities are ingested the full drug effect (narcotic in the case of alcohol) is immediately experienced, the oxidases of the system being unable to defend it against a large dose.

3. All oxidation yields heat, whether it is a normal catabolism or a protective oxidation. That the heat from the oxidation of alcohol is not a normal catabolism for the purpose of heat liberation is evident from the fact that,

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(1) Jour. Am. Med. Assoc., Feb. 2, 1907.

notwithstanding the liberation of heat through oxidation of alcohol, the temperature of the body falls, because of increased loss of heat from the surface. This increased loss is due to dilatation of peripheral vessels.

4. Decreased catabolism of carbonaceous or nitrogenous foods following ingestion of a narcotic is a universal fact depending on the drug effect and giving to the oxidized narcotic no significance as a food. It may be said without reservation that ethyl alcohol is not a food in the scientific significance of the word.

Hall regards the following as statements of demonstrated facts: So many antitheses between alcohol and food are noted that there is an inclination to try the deadly parallel on the two substances.

FOOD.	ALCOHOL.
1. A certain quantity will produce a certain effect at first, and the same quantity will always produce the same effect in the healthy body.	1. A certain quantity will produce a certain effect at first, but it requires more and more to produce the same effect when the drug is used habitually.
2. The habitual use of food never induces an uncontrollable desire for it, in ever-increasing amounts.	2. When used habitually it is likely to induce an uncontrollable desire for more, in ever-increasing amounts.
3. After its habitual use a sudden total abstinence never causes any derangement of the central nervous system.	3. After its habitual use a sudden total abstinence is likely to cause a serious derangement of the central nervous system.
4. Foods are oxidized slowly in the body.	4. Alcohol is oxidized rapidly in the body.
5. Foods, being useful, are stored in the body.	5. Alcohol, not being useful, is not stored in the body. cretion of CO_2.
6. Foods are the products of constructive activity of protoplasm in the presence of abundant oxygen.	6. Alcohol is a product of decomposition of food in the presence of a scarcity of oxygen.
7. Foods (except meats) are formed in nature for nourishment of living organisms, and are, therefore, inherently wholesome.	7. Alcohol is formed in nature only as an excretion. It is, therefore, in common with all excretions, poisonous.
8. The regular ingestion of food is beneficial to the healthy body, but may be deleterious in the sick.	8. The regular ingestion of alcohol is deleterious to the healthy body, but may be beneficial to the sick (through its drug action).
9. The use of foods is followed by no reaction.	9. The use of alcohol, in common with narcotics in general, is followed by a reaction.
10. The use of food is followed by an increased activity of the muscle cells and brain cells.	10. The use of alcohol is followed by a decrease in the activity of the muscle cells and brain cells.
11. The use of food is followed by an increase in the excretion of CO_2.	11. The use of alcohol is followed by a decrease in the excretion.

12. The use of food may be followed by accumulation of fat, notwithstanding increased activity.	12. The use of alcohol is usually followed by an accumulation of fat through decreased activity.
13. The use of food is followed by a rise in body temperature.	13. The use of alcohol may be followed by a fall in body temperature.
14. The use of food strengthens and steadies the muscles.	14. The use of alcohol weakens and unsteadies the muscles.
15. The use of food makes the brain more active and accurate.	15. The use of alcohol makes the brain less active and accurate.

Regulating Blood Pressure. In an interesting editorial by Kellogg,[1] the writer takes up the subject of "The Physiologic Method versus Alcohol and Other Drugs as a Means of Regulating Blood Pressure," with the preliminary statement that the implicit confidence which has been placed in alcohol as a stimulant drug has, during the last twenty years, been waning with increasing rapidity, until at the present time most of the eminent authorities condemn its use as pernicious and most positively contraindicated in the very cases for which it has for centuries been commended. The writer of this editorial is glad to know that those who have lost confidence are eminent authorities, as it is pleasing to be so classified. By pen and word of mouth he has endeavored to impress this matter on his professional brethren. Kellogg's editorial quotes Abel, of Johns Hopkins, as follows:

"So far as experimental evidence goes, we may say that alcohol, as such, when it is introduced into the circulation with the avoidance of local irritation, is not a circulatory stimulant. In moderate quantities it has also no appreciable effect on the arterial blood pressure. When a change becomes apparent, it is always in the direction of a fall, and not a rise. In the early stages of its action it usually causes some degree of flushing of the skin and brain, and later, when very large quantities have been taken, vascular dilatation of the abdominal vessels occurs. It is due to the depressant action of the alcohol on the nervous centers which control the calibers of the arteries, and also in part to the weakened heart."

This latter doubtless shocks the sensibilities of quite a number who have heretofore believed that alcohol or whisky were agents to increase vigor, overcome collapse, and strengthen the individual.

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(1) Modern Science, March, 1907.

"It cannot be denied that certain stimulant effects frequently accompany the use of alcohol, but these are due, as has now been shown, not to the direct effects of alcohol on the central nervous system or great vital functions of the body, but are simply the result of the transient irritation produced by this contact with the mucous membrane."

Of this condition Abel speaks forcibly and clearly: "These indirect influences must not be allowed to hide the true character of alcohol, which is always depressant in kind, and which easily gets the upper hand of the effects just noted. In a word, alcohol in respect to its inherent action, when once in the blood and tissues, must be classed with the anesthetics and narcotics. The paralyzing action of alcohol on the walls of the vessels or on the peripheral terminations of the vasomotor nerves in the walls, or by an action on the circulatory centers of the medulla and cord, or by a combination of these actions, is plain."

Janeway asserts: "Least of all so-called stimulants does alcohol deserve the name. As in animals and normal men it is without influence on the blood pressure or the force of the heart, so in disease the same holds true." The pharmacologists agree that it produces no rise in the blood pressure or any cardiac energy when injected directly into the veins. On the contrary, if a considerable dose is given, arterial pressure falls from weakening of both vasoconstrictor centers and heart.

Continuing, Kellogg remarks that "this fact accounts, in part at least, for the enormous reduction of the mortality when the Brand bath was substituted for milk and brandy. The cold bath raises blood pressure, while alcohol lowers it. Consequently and conversely the cold bath lowers the mortality rate, while alcohol raises it. When we recall the effect that the mortality in the United States alone from typhoid fever amounts to more than 70,000 persons annually, at least 30,000 of whom might be saved alive by the substitution of the hydriatric method for the methods commonly employed, it appears to be high time that the facts of exact science which have been worked out by men of world-wide reputation should be utilized in the saving of human life.

"Alcohol is an arch-deceiver. It promises strength and gives weakness; promises warmth, but lowers temperature; promises stimulation, but produces anesthesia. Alcohol has failed to stand the test of experiment anywhere. The sphygmomanometer has certainly spoiled its reputation as a circulatory stimulant. The experiments of Rhomberg, Crile and numbers of other investigators have" clearly shown superiority of the physiologic method as a means of correcting defects of the pressure-regulating function."

Physiologic Action of Whisky. Experiments have been made on the physiologic action of whisky on the circulation by F. J. Charteris and E. P. Cathcart.[1] They note that many pharmacologic experiments which have influenced the ideas of physicians as to the effects of alcohol on the system have been made with pure alcohol, and not with the forms in which it is employed in medicine, such as brandy, whisky, champagne and port wine. It is difficult to define just what whisky is. In Scotland it is the pot-still product, and not the patent-still product. The former is more complex in character and may contain secondary ethereal products; the latter is a poorer and cheaper substance. The authors made a series of experiments on three men, practical abstainers, noting the relative effects on the circulation of absolute alcohol and whisky. The dose given corresponds to one ounce of absolute alcohol, and sufficient water was added to make the dilution of alcohol one to four. The conditions under which the experiments were carried out are fully specified. In general terms it may be said that the effect on the pulse and pressure of all three alcoholic preparations, in the above dosage, was very slight, and that after the first ten minutes practically no difference could be detected in action between the absolute alcohol and the whiskies examined. In other words, the action of whisky on the pulse and pressure depends on its alcoholic content, and not on any special body distilled over either in the process employed in the manufacture of pot-still whisky or in that used in the preparation of the patent-still whisky. The same result was obtained in a series of pneumonia cases and a series of intravenous injections on rabbits.

Alypin. Maestra[2] made some experiments on alypin, which is prepared from stovain, and possessing many of the properties of cocain, with a lessened toxicity. Chemi-

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(1) British Med. Jour., May 18, 1907.
(2) Clinic. Med., An. 12, No. 44.

cally it is a primary tetra-methyl-diamino-ethyl-dimethyl-benzoyl-carbinol-hydrochlorid. It is a nonhygroscopic white crystalline powder, easily soluble in water and alcohol. The solutions can be boiled without losing their anesthetic action. Complete anesthesia of the eye can be produced by a 1 per cent. to 2 per cent. solution in about a minute. It is nearly the equal of cocain in anesthetic action, and, moreover, can be given in neutral solutions, which is an advantage for infiltration purposes. Orthoform and nirvanin, which the author has also tried, are less toxic, but do not give such good anesthesia. With frogs the toxic dose of alypin is about 1 centigram, and death occurs from cardiac paralysis; in rabbits it is from 5 centigrams to 6 centigrams per kilo of weight. Its action on respiration is to accelerate inspiration and increase the duration of the expiration. In small doses it has a very slight action on the heart; in larger doses it stops the heart in systole and lowers the blood pressure, inducing severe respiratory disturbances and convulsions.

Amyl Nitrite. In 1905 Francis Hare published in *The Lancet* and elsewhere the reports nine cases in which the inhalation of amyl nitrite had been immediately successful in stopping *hemoptysis*. There was no complete failure, but in one case in which there had been three attacks, one attack was moderated only, not immediately stopped. This was due to inadequacy of dose. Since then H. C. Colman, in Scotland, and E. T. Smith, in Queensland, have each published one case, both immediately successful. But it is in France that the method has been chiefly studied. M. J. Rouget refers to ten cases of his own; and Georges Bourland, in a graduation thesis, describes 13 cases, 4 of his own, 6 by Pic, and 1 each by Leclerc, Lemoine and Mouisset. Many of these cases had several attacks, and in every instance the bleeding ceased immediately under amyl nitrite inhalation. The dose varied from three to nine minims. There are thus recorded 34 cases in which hemoptysis occurred once or several times, and in which in every instance, save one recorded by himself, the hemorrhage, immediately ceased under amyl nitrite inhalation.

Conformably with these clinical results Pic and Petitjean have demonstrated the action of the drug in the laboratory. Dogs weighing from 15 to 20 kilograms were curarized, part of the chest wall removed, and artificial respiration was performed. Amyl nitrite was then injected into the femoral vein. Within a few seconds white patches commenced to form on the surface of the lung. These steadily extended, then coalesced, so that finally, in from two to three minutes, all, or nearly all, the lung parenchyma became exsanguinated. This extreme effect lasted several minutes, but from seven to ten minutes elapsed before the normal rose color returned. It would seem that the vasomotor influence of the drug, at any rate, on the pulmonary circulation is more enduring than has been suspected. The hemostatic power of the vascular change was demonstrated by snipping the anemic lung with scissors, when hardly a drop of blood exuded.

Pic and Petitjean consider that the drug acts through an active vasoconstriction of the pulmonary system, not less than through vasodilation of the systemic periphery. They state that synchronously with the paling of the lung there is a rise of pressure in the pulmonary artery. Against this conclusion, however, must be placed the clinical fact that amyl nitrite is equally efficient in many hemorrhages from the systemic vessels. Menorrhagia, apparently from any source, may, as a rule, be effectually controlled by a single inhalation a day. Moss found the drug successful in the reactionary hemorrhage following the removal of parovarian cysts and in ruptured tubal gestation. And J. R. Keith has recently recorded an immediately successful result in postpartum hemorrhage.

In Hemoptysis. The drug which seems to George A. Crace-Calvert,[1] of Ruthin, North Wales, to be most valuable in practically all cases of hemoptysis is amyl nitrite. At first sight, he says, it appears to be madness to give a patient with a wounded and bleeding vessel a drug which acts powerfully as a dilator of vessels, but—even though its action be only transient—it produces such an immediate fall in the general blood pressure by dilatation of the vessels throughout the body that the pressure at the bleeding point is lowered and there is time for clotting to

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(1) Lancet, April 6, 1907.

take place, and the hemoptysis usually ceases almost instantly. Even if the pulmonary vessels are dilated the ill effects are more than counterbalanced by the fall in blood pressure. Moreover, amyl nitrite causes no reactionary pulmonary hyperemia (after the anemia). Again, amyl nitrite has a further good point, and that is the fact that it does not interfere with coughing, and so does not place any obstacle in the way of the patient getting rid of the effused blood, and hence it considerably lessens the risk of septic trouble later.

Crace-Calvert always carries 3 minim capsules of amyl nitrite, and as soon as called to a case of hemoptysis breaks one and tells the patient to inhale it quietly and regularly, at the same time warning him of the feeling of fulness in the head it produces. The bleeding usually stops almost at once, though the patient may go on coughing up clotted blood which has been already effused. After that, if the patient is excited or alarmed, or the lungs appear to be irritable, the author may give a hypodermic of morphin.

In all he reports about twenty-two attacks of hemoptysis occurring in five patients, and in the whole of them the bleeding ceased at once or was remarkably diminished directly after the administration of the amyl nitrite, so that it seems impossible not to ascribe the good effects to this drug.

At the Climacteric.[1] At the menopause there is a group of symptoms very annoying to the woman affected and very aggravating to the doctor who does not know what to prescribe. The patient seeks relief for flushing of the face; a sensation of intense heat about the face and neck; palpitation of the heart; spells of weakness or prostration so great that she is compelled frequently to sit, or even to lie down; the flushing, etc., followed by free perspiration. With these there is more or less pronounced anemia, mental depression (sometimes almost amounting to melancholia) and broken slumber. For the general "rundown" condition tincture of the chlorid of iron and a generous diet should be ordered. For relief of the immediate distress, amyl nitrite may be depended on in most cases; it relaxes the whole arterial system, greatly reducing arterial

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(1) Am. Jour. of Clinic. Med.

pressure. One-half to three minims may be taken either by inhalation (by breaking glass beads containing the drug) or by the stomach (dissolved in alcohol—five drops to the dram), the solution being dropped on sugar. In some cases no more than a tenth of a drop causes bad feeling; in such the drug must be discontinued.

Antisclerosin. Chief Staff Surgeon Ladislaus Ritter von Zgorski[1] gave antisclerosin a trial in cases of advanced *sclerosis* in which iodin had failed utterly, being impelled to do so by Caube's demonstration that demineralization does occur in arteriosclerosis.

While not reporting many cases and not giving exact clinical records, he believes that the evidence presented justifies him in calling attention to the medicament. He agrees with Goldschmidt that a series of favorable actions must indubitably be ascribed to antisclerosin, and that its effects are permanent and not temporary. His patients had central as well as peripheral arteriosclerosis, and he believes that the remedy will be of much value as a prophylactic of the complications which often accompany arteriosclerosis. His dosage was two tablets, three times daily.

Antithyroidin. The antithyroidin of Moebius, a serum obtained from the blood of thyroidectomized goats, has given very promising results in Grave's disease in the hands of Boerman,[2] gynecologist in Groningen. In one case the *tumor of the thyroid* disappeared entirely after daily doses of 1 gm. (15 min.) given for one month. Shortly after the patient gave birth to a healthy child and remained permanently free from symptoms.

Favorable reports are also received from J. W. M. Indemans,[3] who concludes that antithyroidin (Moebius) if given carefully in slowly increasing doses will almost always bring about improvement and often a cure. The exophthalmos and other eye symptoms, the tremor and the symptoms due to disturbance of the central nervous system disappear most rapidly.

Apomorphin. J. H. Lowery,[4] of Neola, Iowa, had a few cases of persistent *vomiting* due to gastric and duodenal

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(1) Repert. der prakt. Med., 1904, No. 10.
(2) Aerzt. Rundsch., 1905, No. 1.
(3) Deut. med. Zeit., 1905, No. 1.
(4) Am. Jour. of Clinic. Med.

irritation, virtually gastroduodenitis. He tried everything in the way of oral medicine ineffectually. The thought occurred to him to try apomorphin, so he dissolved a few granules in twenty teaspoonfuls of water, and ordered a teaspoonful every half hour. Result: No vomiting after the first dose.

Also his little niece, seven years old, was taken with bilious vomiting and a good deal of intestinal tenderness, the vomiting persisting from Friday until Sunday night at varying intervals, notwithstanding every measure adopted to relieve her. The condition was undoubtedly due to some gum she had swallowed, obstruction of the bowel following. She was given high enemas of olive oil and oil by the mouth, in goodly quantities, but would vomit up much of it. There continued incessant "empty retching and straining to vomit." A jar, moving of the bed, the purring of a cat, or smell of victuals made her vomit. He dissolved four pills (gr. 1/67) in twenty teaspoonfuls of water and gave her a teaspoonful every thirty minutes, only for a few doses, because vomiting ceased after the first dose. Monday, her bowels not having moved, he gave her a small dose of calomel and again had recourse to oil, followed by cascarthartic (Lilly's). Vomiting recurred, but the apomorphin in the same manner quelled it at once. After her bowels were emptied she was entirely well. On the grounds of his success with apomorphin he now recommends it in vomiting of pregnancy, giving it every half hour until vomiting is controlled, then every three or four hours.

In Chorea. Montrose Graham Tull, at a meeting of the Philadelphia County Medical Society, reported a case of acute chorea coming on gradually in a girl, fifteen years of age, with menstruation not fully established, presenting symptoms of acute mania, thickened tongue, guttural and unintelligible articulation, covered with a confluent, morbilliform rash, and with incessant choreic movements. After all the accepted forms of treatment had been tried for two weeks, with absolutely no effect, Tull concluded to try apomorphin in tentative doses, and 1/40 grn. was consequently administered hypodermically with remarkable result. The choreic movements ceased in about three minutes and the child slept peacefully and quietly. Apomorphin, 1/20 grn. every three hours by the mouth, was continued for three or four days in addition to the arsenic which she had taken from the beginning, with a perfectly uninterrupted recovery. Within two weeks the patient went to the seashore for the summer and soon became perfectly well. The case seemed of value, as the diagnosis and earlier treatment were both reviewed and indorsed by a specialist of standing, and from the fact that practically all known means had been exhausted before apomorphin was used.

Argyrol. MacGillivray[1] states that argyrol is one of the most valuable remedies at the disposal of the ophthalmic surgeon in the treatment of certain conjunctival and tear duct affections, for it is the only remedy the author knows of that can cure efficiently, without pain and discomforts to the patient, and without trouble or anxiety to the surgeon.

Arsenic. J. Snowman[2] notes that the great value of alteratives in therapeutics is that they often change pathologic processes brought about by disease into physiologic processes. Their failure frequently arises from the circumstance that they introduce into the body their own toxic pathologic processes. This is exceedingly well exemplified by arsenic, which is able to produce a mimicry of several diseases, much to the discomfiture of diagnosticians. In the nervous system we may have peripheral neuritis with rapid muscular atrophy, or definite myelitis. The intestinal canal may present appearances closely resembling cholera, with granular changes proceeding to fatty degeneration in the epithelial lining, the interstitial tissue and Peyer's patches being invaded by large, round granular cells. The liver may be affected in such a manner as to suggest a diagnosis of acute yellow atrophy. The skin may be the site of lesions, the number of which is almost legion. Every anatomic manifestation known to dermatology from a slight erythema to a bulla is represented. The most characteristic appearances, however, are pigmentation, herpes zoster and hyperkeratosis of the

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(1) Scottish Med. and Surg. Jour.
(2) Lancet, April 27, 1907.

palms and soles. Hutchinson maintains that these thickenings may develop into true epitheliomatous growths. The sphere of action of arsenic is obviously very extensive when it is allowed to act on the general healthy organism. Its danger lies in its tendency to cause fatty infiltration and degeneration, and its therapeutic applications are accordingly very much hampered, though practical medicine still indicates a considerable field for its employment. The art of employing arsenic successfully consists in gaining control of its pharmacologic action and making it subservient to therapeutic aims.

In Pneumonia. T. F. Dunn,[1] visiting physician to the Fordham Hospital, Fordham, N. Y., directs attention to a number of cases of pneumonia which were treated at the hospital and which seem worth reporting both by reason of the medication employed and the result obtained. The medication consisted essentially in the use of large doses of Fowler's solution of arsenic. In some cases nothing else was employed, and it was found that enormous doses of the drug were tolerated in a most surprising manner. Five minims every two or three hours were given in these cases for several days without the slightest evidence, either proximate or remote, of arsenical poisoning—in fact, it would seem that these patients showed the same tolerance of arsenic that malarial patients show of quinin, or that syphilitics do of mercury or potassium iodid.

Aside from the absence of untoward symptoms, there seemed to be positive results in the control of the toxemic symptoms of pneumonia. In several of the cases there was a decided break in the temperature about forty-eight hours after the beginning of medication. The record of the cases constitutes a very interesting exhibit, as it departs so radically from the classical chart of pneumonia, ending either by crisis or lysis. In all, ten cases are reported, with the death of but one patient, whose case seemed hopeless on admission to the hospital.

Arsenite of Copper. Getteman[2] speaks highly of the arsenite of copper as a *diuretic*. Its use in intestinal troubles is well known to the profession, and because it is

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(1), N. Y. Med. Jour., Dec. 1, 1906.
(2) Albright's Office Practitioner, February, 1905.

considered a dangerous poison it is looked on as capable of doing much harm, and is not used as much as it ought to be. When a quick, reliable and effective diuretic is needed, it will sometimes work wonders. This is especially so when decrease or suppression is due to cold or exposure, or when activity of skin is lessened by severe burns, etc. He gives in severe cases 1/20 gr. as an initial dose, and 1/100 gr. every hour, gradually reducing its exhibition as improvement progresses.

Atropin. M. Roch,[1] of Geneva, recently undertook to determine whether the well known physiologic antagonism between the action of morphin and atropin could be utilized in a case of *opium poisoning* in man. He observes that the respiratory center in man is certainly more sensitive to the action of morphin than that of the rabbit. The clinical results, therefore, of the administration of atropin are necessarily less striking than those obtained in the laboratory. Moreover, there is a point in both the animal and in man at which the quantity of morphin is so much in excess that the antidote is not able to overcome its effects. If in such a case the dose of atropin should be gradually raised, we shall soon arrive at a point at which the large dose, instead of exciting the respiratory center, actually depresses it still further, and at the same time produces injurious effects on other organs, and particularly the circulatory system. Under such circumstances one intoxication is merely added to another, and only hastens the fatal result. Roch's conclusions are formulated as follows:

1. In certain cases of poisoning by atropin, we may administer large doses, actually toxic doses, of morphin, and with success.

2. There are on record a number of cases of mixed poisoning, where the absorption of atropin simultaneously with that of morphin has prevented the latter from developing all of its narcotic effect and its depressing effect on respiration.

3. Cases of poisoning by morphin, which were treated by belladonna or its alkaloid, and favorably influenced, abound in medical literature. The amelioration manifests

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(1) Bull. général de therap., April 30, 1907.

itself most rapidly when the remedy has been given hypodermically.

4.. Finally, there exist also reports of numerous cases in which the action of the atropin appeared to be nil, or even injurious. Experiments have shown that failure is caused either by an excessive quantity of the poison or by the injudicious use of the counter-poison—too large a dose usually, too small a dose more rarely.

The injection of small doses under the skin—say, two milligrams—repeated several times, appears to be the method of choice. In every case, however, it is necessary to stop the series of injections when the miosis produced by morphin begins to be replaced by the atropin mydriasis. It is hardly necessary to state that in a given case of poisoning by morphin, the treatment by atropin should not be resorted to until after having used all the evacuants and antidotes possible. Moreover, when confronted with a serious case, we should neglect no means which may be capable of reawakening the respiratory center. As adjuvants of atropin, the author therefore recommends flagellations, cold affusions, revulsives, and even moderate doses of caffein, strychnin, etc. In alleging that atropin is useful in cases of morphin poisoning, it is desired neither to assert that it is the only treatment which deserves to be employed, nor especially to declare that it is all powerful.

Simon[1] administered morphin to dogs and followed it with atropin, which reduced the nausea and vomiting markedly. Medium doses of atropin act promptly in most cases. He attributes the effect of atropin to several factors. Atropin stimulates the respiratory center and indirectly depresses the vomiting center. It reduces the salivary flow, which also helps to suppress nausea and vomiting. Atropin also excites the cerebral cortex and the vascular supply of the cerebrum, both of which aid in suppressing the nausea following morphin injections. Similar results have been observed in human beings, and the writer advises the combined use of morphin and atropin in people who easily become nauseated from morphin.

In Coryza. O. Kohnstamm[2] has "discovered" the value of atropin in coryza. He employs it in the prodromal stage

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(1) Arch. Int. Pharm. and Therap.
(2) Therap. der Gegenwart, xlvii, No. 11.

in order to abort the attack, although even in fully developed coryza with serous or purulent secretion the remedy is promptly effective. The necessary doses varied between ½ and 1½ milligrams (1/120 to 1/40 grain). This quantity is dissolved in a glass of water, which is slowly taken in the course of an hour. After one or two hours the secretion usually ceases. In case there is a recurrence on the next day the dose may be repeated. It is interesting to note that with the cessation of the nasal flow the other general symptoms of coryza also disappear, as if the formation of toxins were closely connected with the secretion from the mucous membrane.

Balsam of Peru. F. J. W. Porter[1] considers balsam of Peru much superior to sulphur in the treatment of *scabies*. He bases his opinion on the results of the treatment of 51 cases in the Colchester garrison. He outlines the treatment as follows:

The patient should lie in a very hot bath for at least half an hour and be thoroughly scrubbed with flannel and ordinary soap by a reliable orderly. Particular attention should be paid to parts which are obviously much affected by the disease. He is then quickly dried and varnished all over with a mixture of balsam of Peru, 3 oz., and glycerin, 1 oz. This application—best applied by a soft, worn nail-brush—is well rubbed into the skin. The above quantity will be found sufficient to varnish an ordinary sized man. He then puts on hospital clothing, the cotton shirt being worn next the skin. His ordinary clothing and his barrack bedding are sent to be disinfected. In very bad cases it is advisable to give a second rubbing to the worst places next morning.

No patient who has been properly varnished has ever reported that his night's sleep has been disturbed by itching; and if the remedy has been faithfully applied according to the above instruction, that is the end of the case.

Porter says that in military practice the great features of this method as compared with preparations of sulphur are: 1, The possibility of returning men to their duty after a few hours' detention in hospital; 2, the absolute certainty that the acarus has been killed; 3, the ability to

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(1) British Med. Jour., March 30, 1907.

dispense with a ward which has to be kept for the treatment of these cases.

Betaeucain Lactate. H. B. Ellis[1] uses a 12 per cent. solution of lactate of beta-eucain to anesthetize the mucous membrane in nose, throat and ear troubles. It does not disturb the circulation or shrink the tissues, hence in operations on the turbinals the amount of tissue which should be removed is easily estimated. For turbinotomy he uses a 12 per cent. solution on a cotton tampon, which is allowed to remain five minutes and is then replaced by a fresh one, which remains a similar time. A 5 per cent. solution dropped into the conjunctival sac causes more smarting than a 4 per cent. solution of cocain, but there is neither hyperemia nor anemia, and vision is in no way disturbed. The anesthetic effect is equal to that of a 4 or 5 per cent. cocain solution.

Betul-Ol. The preference given to the administration of salicylates by the cutaneous method rather than by the stomach, in *rheumatism,* is becoming very general, but it has never been quite understood why betul-ol, which is a liniment of mentho-oleo-salicylate, is so much more readily taken up than plain methyl salicylate or other salicylic derivatives which have been brought forward to replace it. It is well established that chloroform assists materially in the passage of external applications, through the cutaneous integument and liniments frequently contain chloroform as an addition. Since betul-ol contains 2 per cent. of a chloromenthol, which yields free menthol and chloroform on contact with any alkali, it is easy to see that the alkaline fluids of the subcutaneous tissues will act in the same way, and we can understand how betul-ol, especially when applied by gentle friction, which assists in the mechanical penetration of this liniment, gives rise to nascent chloroform, menthol and a basic salicylate. Proof of this is easy of demonstration on testing the urine for salicylates.

Bismuth Salts H. A. Caley[2] read a paper before the Therapeutical Society of London on some points in the actions and uses of bismuth salts, referring principally to the three insoluble salts in common use—the subnitrate, salicylate and carbonate. Their local action on the stomach

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(1) Calif. Med. and Surg. Reporter, March, 1905.
(2) Lancet, Feb. 18, 1905.

was first considered, their mechanical, astringent and antiseptic properties were then discussed, and reasons were adduced for regarding the local action on the mucous membrane as the most important factor, their special usefulness in gastritis and ulcer being emphasized. Of the three, the carbonate was the most generally useful as a gastric sedative. In dealing with the action of bismuth salts in intestinal disorders, Caley brought forward experimental evidence bearing on the antiseptic action of the three salts; the subnitrate a definite germicidal action on cultures of the bacillus coli, the salicylate a similar but much weaker effect, while the carbonate was inert as a germicide.

Under laboratory conditions this antiseptic action of the first two salts was destroyed by alkalies; on the other hand, therapeutic experience showed that an alkaline medium did not destroy their efficacy. For this and other reasons it was inferred that the principal action of bismuth in the intestines was a local action on the mucous membrane, and that the presence of catarrhal inflammation was one of the chief indications for its employment. If given in sufficiently large doses, bismuth was potent in many intestinal antiseptics, strong astringents and opiates. Of these three salts the subnitrate was the most efficacious in irritant lesions of the intestines, and where a more marked astringent effect was desired he preferred a combination of this salt with catechu or other vegetable astringents to the more recently introduced bismuth subgallate.

Blisters. Segert[1] has formulated the following conclusions based on his personal experience in the use of blisters in acute *pneumonia:* 1. In patients treated by the application of blisters there is certainly a sedative action on the painful phenomena. 2. In three cases the defervescence (crisis) was early. 3. Of forty-five pneumonia patients treated by blisters, there were ten deaths, whereas there were nine deaths in thirty-five cases treated differently. 4. Ordinary cleanliness is sufficient to avoid inflammatory or septic complications of the blistered surface, which only rarely happen, anyhow. 5. As regards the effect on the kidneys, renal disorders do not seem to be more frequent in cases treated with cantharidal vesication than in other

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(1) Marseille med. and Bull. général de therap., Nov. 23, 1906.

cases. 6. The proportion of chlorids in the urine is only slightly modified. 7. In only two cases was there observed a slight, painful cystitis.

Boric Acid. F. W. Bock,[1] of Rochester, N. Y., gives his experience with boric acid in the treatment of ten cases of simple parenchymatous *goiter*. Symptoms were relieved and in most cases the size of the tumor was considerably reduced. Seemingly there was no ill effect from the drug, probably due to the fact that elimination was stimulated by the large quantity of water taken, two glasses being taken with each 0.65 gm. (10 gr.) of acid. In one case, in which the patient did not follow directions, but took the dose with only a swallow of water, a dermatitis was produced on about the third day, but this readily cleared up when the drug was withdrawn. Not more than an ounce of the drug was given continuously in any case without a rest of a few days. In no case was there a failure of good result. In none of the cases was there any degenerative changes in the tumor whatever.

Borosalicylic Acid. Carcarro and Cesaris[2] recommend the following as a disinfectant, or antiseptic, agent to take the place of corrosive sublimate:

℞	Boric acid	12	ʒ iii
	Salicylic acid	6	ʒ iss
	Water	1,000	O ii

This solution has no offensive qualities, it is an efficient microbicide, and may be freely used without fear of accidents.

Buttermilk. H. C. Carpenter[3] reports twelve cases of babies with *infantile atrophy, gastroenteritis*, etc., in whom he had generally good results from the use of the following mixture: Buttermilk, 1 quart; wheat flour, 3 1-3 teaspoonfuls; granulated sugar, 15 teaspoonfuls. The ingredients were carefully mixed, heated up to the boiling point, but not boiled, and then rapidly cooled and kept till used. Full directions are given for the preparation, precautions against curdling, etc. The cases were not selected as likely to do well, but in every case regular milk mixtures had been tried and failed before the buttermilk was begun. The ages ranged from 1 to 15 months; the average gain in

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(1) Amer. Med., March 25, 1905.
(2) La Quinzaine therap., Nov. 25, 1906.
(3) Jour. Am. Med. Assoc., May 11, 1907, p. 1576.

weight during the use of buttermilk was eight ounces a week. Carpenter remarks the advantage of cheapness in the buttermilk feeding, and believes it a most excellent food for infants suffering from intestinal indigestion, enteritis and marasmus. He has observed no unpleasant effects from its use; children almost invariably take it well. A few, when first put on the diet, vomited slightly, but, with one exception, this ceased in a day or two. The point he especially emphasizes is that the success is not so much due to the absence of fat as to the great ease with which the proteid of buttermilk is digested. He has observed this in almost every case. Several of the infants who were unable to digest 0.75 per cent. of calcium casein digested perfectly the 2 or 3 per cent. of casein lactate in the buttermilk.

In Gastrointestinal Disease. August Strauch[1] states that buttermilk has proven to be one of the best dietetic remedies for gastrointestinal diseases of children, according to the extant medical literature of Germany. Sour buttermilk, however, is not to be administered in its raw primary state, but should be more or less modified. According to Rubinstein's studies pathogenic bacteria (of diphtheria, typhoid, tuberculosis, *Bacillus pyocyaneus*), as a rule, gradually perish spontaneously in buttermilk. The acidity of the food promotes tryptic digestion. The digestibility of the nitrogenous substances of buttermilk lessens the work of the glands of the stomach and intestines. No absolute rules can be formed for the indications for the use of buttermilk.

Calcium Carbonate. Linguerri[2] has found that calcium carbonate, given twice daily in the form of a cachet containing 11 grains, is of real service in the treatment of *epilepsy*. His experiments dealt with five epileptics, and extended over two years; his object was to determine how far the treatment diminished the number of fits occurring daily, and how far it improved the mental condition of the patients. He alternated periods of two to four months during which calcium carbonate was given, with similar periods during which expectant treat-

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(1) Med. Record, Mar. 30, 1907.
(2) Bull. d. Sci. Med., December 1906.

ment was adopted. He finds that the daily average of fits is considerably lessened while the salt is taken, and that a very great improvement is to be observed in the mental and psychic conditions of the patients; they are less confused, irritable, and excitable while taking calcium carbonate.

Calcium Chlorid. In the following cases of *purpura*, both somewhat unusual, treatment by calcium chlorid proved rapidly effective, writes W. B. Russel.[1]

CASE 1. A male child, aged three years, had previously suffered from edema of the face whenever he ate white of egg, but otherwise had been healthy. He was brought to the author on account of subcutaneous hemorrhage over the gluteal region. The marks were in streaks and spots, as though they depended on pressure, and looked like the result of a severe whipping. Except one or two lines, all were nearly vertical along the median folds of the buttocks. There were no spots on the legs, and only one on the outside of the concha elsewhere. The child appeared tired, but not ill.

CASE 2. The second patient, a male child of four, was said to have had a sprain of the leg a fortnight before and to have suffered from gastric trouble and diarrhea, one of the motions having been black. His legs were covered with hemorrhagic, purple, raised blotches, and the region around the ankles was much swollen by deep hemorrhagic effusion and exquisitely tender. He was very ill, and quite unable to walk; his gums were normal.

This second case was probably one of "Henoch's purpura," and the supposed sprain had no doubt been a spontaneous hemorrhage in or about the ankle-joint, and the vomiting part of the disease. The author prescribed for the first case 3 gr. doses of calcium chlorid three times a day, and the second case 4 gr. doses of the same drug, both being placed on a diet of raw meat and fresh milk. The spots and swelling began to disappear in about twenty-four hours, and the second patient was able to run about in less than a week. No cause for the illness in either case could be ascertained. There was no evidence of swollen gums pointing to scorbutus. The distribution

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(1) Brit. Med. Jour., Jan. 26, 1907.

of the hemorrhage in the first case is interesting, and the severity and depth of the effusion, followed by such rapid recovery, notable in the second case.

In Chilblains. G. Arboar Stephens[1] advises in the treatment of chilblains to administer drugs which alter the character of quality of the blood, especially as regards its exudation properties. The drug which seemed to him the most appropriate was calcium chlorid, and he gave it in 10 or 15 grain doses with licorice extract three times a day, and the patients, most of whom were engaged in sedentary occupations, began in two or three days to show remarkable signs of improvement. Some, whose chilblains had broken, found that these were rapidly healing and others who were expecting them to break were agreeably disappointed to find them gradually subsiding. Several patients remarked that when previously healing stiffness was felt for some time, but with the calcium chlorid the stiffness disappeared very quickly.

In another series of 20 cases in children, some with very bad chilblains in the ulcerating stage, 10-grain doses of calcium chlorid produced decided improvement in three days. Calcium lactate has been found equally efficient. The only unpleasant effect was a sensation of giddiness in two cases.

In Preventing Antitoxin Urticaria, attention is called to the fact in the *New York Medical Journal* (from *Le Bulletin Medical*) that Arnold Netter reports that so far no method has been found to prevent the appearance of the urticarial eruption after the injection of a dose of diphtheria antitoxin. He has found, however, that the use of calcium chlorid in the dose of one gram a day on the day of injection, and for two days following, constituted an efficient prophylactic in a large proportion of the cases. Out of 252 patients who took the remedy as directed, there were only a little over 2 per cent. of eruptions, while in 258 cases not receiving it the eruptions were over 15 per cent. The use of calcium chlorid does not in any way impair the action of the diphtheria antitoxin, the mortality in the two groups being nearly the same.

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(1) **Merck's Archives, June, 1906.**

Calcium Iodid. A. G. Peter[1] commends the use of this remedy, stating that in his experience *ulcers* which have for years stubbornly resisted all kinds of treatment, and whose owners have without avail been simply saturated with potassium iodid, in a week or two showed clean granulating surfaces, and have in almost all cases healed up. Two or three cases, which are healing more slowly, though immensely improved, are due, the author thinks, not to any deficiency in the drug, but to the ingenuity displayed by their owners in counteracting its effects—to put off the evil day of their discharge from hospital. In all cases the induration around the ulcers greatly diminished or entirely disappeared. He also observed in a few cases of syphilitic necrosis of the nasal bones considerable benefit from its administration, and great relief was obtained in headaches associated with syphilis. The dose in all cases was two grains in mixture three times a day, and there did not appear to be any increased advantage from augmenting the dose. Any mild external application seemed equally efficacious; in most cases he used a mild mercurial or iodoform ointment.

Calcium Peroxid. The addition of about .4 gram (6 gr.) of calcium oxid per liter (quart) to water completely sterilizes the latter. The action is not instantaneous, but in most cases takes about two hours. After three hours no living bacteria were found in a water which originally contained 355,000 *B. coli communis* and 171,000 *B. typhosus* per c.c. The peroxid is more rapidly decomposed when a little sodium hydrogen carbonate is added to the water, and the sterilization is then completed in about 15 to 20 minutes. The hydrogen peroxid resulting from the decomposition of the calcium peroxid may be removed, together with the precipitate of calcium carbonate, by filtration through manganese dioxid. If stored in close bottles, the sterilized but unfiltered water can be kept for a long time before using for drinking.

Calcium Salts. Lauder Brunton[2] believes *pneumonia* may to some extent be averted by the free use of calcium salts which have a tonic action upon the heart. A good many months ago he was called to see a case of pneu-

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(1) British Med. Jour., April 27, 1907.
(2) British Med. Jour., Mar. 16, 1907.

monia. Fearing that the heart would fail, it occurred to him that calcium chlorid ought to be useful. The only harm it was likely to do was to increase the coagulability of the blood, but any risk of this sort was so small in comparison to that from cardiac failure, that he prescribed it. As the patient for whom he prescribed the calcium made a good recovery he was encouraged to give it again, and has done so in a considerable number of cases. In some of them a fatal result has ensued in spite of everything that could be done, but in a number of them the effects appear so encouraging as to deserve a wider trial for the medicine. He usually gives it in 5 to 10 gr. doses every four hours, simply dissolved in water. As it is very deliquescent it can only be kept in solution. It has a very disagreeable saline taste, but this is well covered with saccharin, 1 minim of the elixir of saccharin containing $^1/_{20}$ gr. of saccharin being sufficient to cover the taste of 10 gr. of calcium chlorid. This mixture may be given either in water or in milk, and it does not interfere with the use of any other remedies.

The author has also used it in cardiac disease, where the ventricular wall appeared to be losing power, and here also the results have been encouraging. In cases of pneumonia, where one wishes to get rapid action, he thinks the chlorid is the best salt of calcium, but in cardiac disease other salts may be employed, such as the lactophosphate or the glycerinophosphate. It is quite possible that the great benefit one frequently observes from a milk diet in cases of heart disease may be due in part at least to the large quantity of calcium salts which the milk contains.

J. D. Cree[1] believes that it is quite as important to know when to withhold calcium salts in *pneumonia* as when to prescribe them. He gives the histories of two cases. Case 1 was that of a stout woman of thirty-eight years who was suffering from severe dyspnea, low tension pulse, albuminuria, and was raising over a pint of watery hemorrhagic sputum in twenty-four hours. The picture was that of a patient drowning in her own excretions rather than dying from a toxemia. She was of the hydremic type and her condition was regarded as due

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(1) British Med. Jour., May 18, 1907.

to an insufficiency in the coagulability of the blood. Diet was restricted and she was given 20 grains of calcium chlorid in water by the mouth. Ten-grain doses were continued hourly for twelve hours, and were then reduced to every four hours. Half a day showed a decided improvement in the patient's condition. The sputum in particular was reduced to half its previous amount, and the bright hemorrhagic appearance gave way to a dull, rusty color.

In the second case, that of a thin woman of twenty-five years, the clinical course of the disease was from the start very different, the case running throughout a "dry" course. In this case thrombosis was feared and the aim was to decrease or rather to prevent any increase in the coagulability of the blood. The patient was allowed soft diet and fruit, and was encouraged to drink lemon juice in water. The author makes a plea against the unreasoning use of the calcium salts in pneumonia. In the first type it renders great service; in the second there is no logical reason for its administration and there is one very good reason against it.

In Convulsions. Silvestri[1] has previously called attention to the lack of lime in the organism as an important factor in the convulsions in eclampsia, tetany, etc., and in epilepsy. The proportion of lime in the blood is revealed by its coagulating properties, as fibrin ferment is an organic compound of lime. Besta found lessened coagulating power in the blood of 37 out of 45 epileptics examined, and other Italians have confirmed the evident relations between convulsions and deficiency of lime in the blood. Silvestri's experience confirms the assumption that lime has a preserving and rejuvenating action on the nerve tissue, and especially on the cortex of the brain. He believes that its action in moderating the condition of hypertension in the brain and the composition of the blood in general has a favorable influence on the digestive and other functions of the body. Calcium salts in the test-tube have a remarkable action in increasing the digestive power of the pancreatic juice. He is convinced that altered func-

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(1) Gaz. degli Ospedali, Milan, xxviii, No. 3.

tioning of the liver is responsible in large measure for the convulsions in eclampsia and for epileptic seizures, as he explains in detail.

For this and other reasons which he enumerates he recommends treating epileptics with liver substance. This supplies the missing liver elements, while it also supplies the lacking calcium salts, as the livers of young animals contain them in large proportions. He maintains that the reduced coagulating power of the blood in epilepsy is the result of perverted functioning on the part of the liver, one of whose tasks is to transform the lime circulating in the blood in such a way that it can readily be utilized by the organism in maintaining normal conditions of coagulation. The liver stores up the calcium and then dispenses it as needed. In epilepsy this functioning is defective, and the unutilized calcium is cast off from the body in the urine, while the nerve tissues suffer from lack of calcium.

In Tuberculosis. G. Angiulli[1] contributes two studies to the therapeutics of tuberculosis by the use of injections of lime salts. He makes use of a 20 per cent. sterilized solution of calcium chlorid and calcium glycerinophosphate, of which 2 to 5 gm. (30 to 75 min.) are employed daily. In case larger amounts of the injections are used, they are divided and put in different parts of the body. As an adjuvant, calcium hypophosphite and calcium glycerinophosphite are administered by the mouth. In the first five years of this procedure improvement was constant, but the author could not report any absolute cures. During the past two years, however, he is of the opinion that healing has taken place.

In explanation of his results, Angiulli points to the fact that calcification of the caseous nodules and the laying down of calcium salts in the miliary tubercules is one of the constant modes of attack on these pathologic formations, as observed in nature. The use of calcium on the part of the body to aid in the process is so marked that the tissues thereby become impoverished in this element, and this leads to diminished resistance. Furthermore, he points out that certain experiments on guinea pigs by Michelozzi have demonstrated the utility of the hypodermic injections of calcium preparations in aiding the calcification of miliary tubercles. The clinical facts and the experimental evidence are assumed by him to amply warrant his deductions and further study.

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[1] Il morgagni, 1906,, No. 21.

Calomel. C. B. Ker,[1] after discussing the use of various antiseptics in *typhoid fever,* lauds calomel as being superior to them all, particularly when employed in connection with intestinal irrigations. He denominates his treatment "antisepsis by elimination," and has used it in 758 cases of enteric fever. The treatment consists in administering aperient doses of calomel (3 grains) every second or third day, supplemented by hot water irrigations of the colon. The diet is chiefly milk, and water drinking is encouraged. The advantages of the method are that it produces no pain and does not cause diarrhea.

The percentage of perforations was under 2 per cent., a rather low figure; hemorrhage occurred in 8.04 per cent., which seems large, but the loss of blood in many of the instances was slight. Marked meteorism is a contraindication to the use of calomel, but this manifestation may be caused to disappear by giving a small irrigation, and calomel may be allowed after twenty-four hours, unless blood appears as the result of the enema. Mercurialism was never noted. The death rate of the patients treated as above was 9.36 per cent., but in calculating these figures no deductions are made of cases dying within forty-eight hours after admission. The author concludes with the statement that the calomel treatment is not unsafe, and ulcerative accidents are not increased. He makes the claim that the treatment leaves the patient free to deal with the enteric poison and relieves him from septic absorption; the bowel is kept clean, meteorism is reduced, and diuresis is assisted. The suggestion is made that this method, in connection with the use of a specific serum, when such is obtainable, would be the most rational to employ in enteric fever.

Camphor. The administration of camphor is strongly recommended by Schaffler[2] for the treatment of *pneumonia:*

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(1) Practitioner, December, 1906.
(2) Med. Press, 1906, 133, 168.

℞ Camphor	1		gr. xv
Tincture of cinchona	3	75	ʒj
Glycerin	3	75	ʒj
Syrup of tolu	120		℥iv
Syrup of orange	30		℥j
Water	150		℥v

M. A tablespoonful every hour.

The camphor acts as a tonic to the nervous system. Thus given it is stated to be more efficacious than when administered by injection. If the latter be preferred, one or two injections of camphorated oil may be given twice a day.

Cane Sugar. Ribizzi[1] reports very favorably on the treatment of *hypersecretion* and *hyperacidity* by means of sugar solution. This solution consists of 200 to 250 c.c. of a 66 per cent. cane sugar in water. In addition to this the author gave atropin, stramonium, hyoscyamin, or belladonna. By this method the total acidity was reduced to normal and the symptoms entirely relieved.

Carbolic Acid. James T. Leach reports remarkable results from the use of pure (95 per cent.) carbolic acid locally in *small-pox.* The method adopted was to apply the acid carefully with a camel's-hair brush to the eruption over a certain area of the body each day, the face and head being selected for the first day.

The first case so treated was that of a girl aged twelve years. It was the seventh day of the eruption, and the vesicles were beginning to become pustular. The result was that the vesicles either dried up into crusts without becoming fully pustular, or the contents of the vesicles became absorbed and the epidermis inclosing the vesicle scaled off. During this process the girl, who had been very ill, felt well and her temperature was normal. The vesicles all scaled off within five days, leaving the usual marks but no pitting.

The second case was that of a man aged fifty-four years, and the disease was confluent. There was a diffuse red rash all over the body and the face was swollen to such an extent that he was scarcely able to see. There was also delirium. It was impossible to apply the carbolic acid in consequence of the character of the rash

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(1) Gaz. Degli. Ospedal., No. 19.

until the vesicles appeared, when the application of the acid was commenced over the face and head. This treatment was assiduously persisted in till the rash over the whole body had been treated, with the result that pustulation was averted. The swelling of the face gradually subsided and the man improved daily, the temperature first falling to normal on the morning of the sixth day. In this case also after treatment the serum in the vesicles either exuded and dried up into scabs, or became absorbed, and the epidermis peeled off.

The same treatment has been applied to two other mild cases in different stages and so far as one can judge from so limited an experience the application of carbolic acid will arrest the disease either in the papular, vesicular or pustular stage. The second case recorded above was severe and confluent. The treatment cut short the disease, the secondary suppurative fever was averted, there will be no pitting, and the offensiveness of the pustular stage was prevented, and in the writer's opinion the infectiousness of the patient was very materially diminished.

Chenopodium. H. Bruning[1] has experimented in the children's wards of the Rostock Hospital with chenopodium anthelminticum in the treatment of *intestinal worms.* This is apparently forgotten in Europe, but is still used in the United States. He is persuaded that it is equally efficacious with santonin, while it has the advantage over the latter drug in not being toxic. He gives the oil (essence) of chenopodium in doses of .25 to .50 gram, repeated three times daily, at intervals of one or two hours. After the last dose he gives some castor oil. He has found the following formula especially useful:

℞	Oil of chenopodium, Gum arabic, finely pulverized	aa 5	0	ʒ j
	Distilled water, Syrup of bitter orange peel	aa 15	0	fʒ iv

Make an emulsion.

And

℞	Oil of chenopodium	10	fʒ iii
	Egg yolk	No. 1	
	Oil of sweet almonds, Gum arabic in powder	aa 10	fʒ iii
	Distilled water	q s. ad 200	fʒ vii

Make an emulsion.

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(1) Med. Klin., July 22, 1906.

Bruning considers that this vermifuge is equally serviceable against the oxyuris vermicularis, the trichocephalus, and the ankylostoma or uncinaria.

Chestnut Leaves. H. J. Ring,[1] of Ferndale, Cal., brought before the notice of the Humboldt County Medical Society what he aptly called "an old chestnut" in the treatment of *whooping-cough, i. e.,* fluid extract of castanea, or chestnut leaves. This has formed the basis of his treatment of the complaint for years. He finds, however, that it acts generally more promptly when combined with belladonna and hyoscyamus. Again he has combined it with small doses of fl. ex. ergot where there was any indication of brain complications, with very satisfactory results.

The beauty of administering this remedy is that when given with simple syrup all children take it readily, as it is not unpleasant. Then, again, it has no bad effect whatever and appears to be perfectly harmless in moderate doses, no matter how long continued. The same size doses should be given at any age over two years, and 15 to 20 minimims every two hours is sufficient. His usual prescription is:

℞	Fl. Ext. Castanea..................	4		ʒj
	Fl. Ext. Belladonna................	0	25	gtts iv
	Fl. Ext. Hyoscyamus, (according to age)...............	0.6—4		m. x—ʒj
	Syr. Simp. q. s. ad................	120		℥iv

(Any desirable flavoring may be added.)
1 dram every 2 hours.

Any local applications may be used in conjunction with this that is required in severe cases, but castanea should be continued until treatment is unnecessary. It will moderate any attack and shorten its duration. It is essential to obtain a reliable preparation of castanea.

Chloral Hydrate. Roger[2] has analyzed eight hundred cases of *scarlet fever,* treated with routine doses of chloral hydrate, and contrasted them with seven hundred and fifty-six cases treated with the usual remedies. He acknowledges that he was skeptical of Wilson's claims made in 1896 as to the routine treatment of scarlet fever with the drug, and expected to prove that it was valueless.

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(1) Cal. State Jour. Med., March, 1905.
(2) Therap. Gaz., January, 1907.

With the exception of early diseases, claimed by Wilson (24 to 48 hours), his studies substantiated all claimed for it. Tables classifying the results of treatment both with and without chloral, and in the use of antitoxin as to albuminuria, nephritis, etc., are given, and the author sums up thus: "The following conclusions may be drawn:

"First, chloral hydrate is of distinct value in the treatment of scarlet fever, and when used in doses of sufficient size to secure light somnolence does not seem to be a circulatory depressant.

"Second, chloral hydrate ameliorates nervous symptoms better than any remedy yet suggested in the treatment of scarlatina.

"Third, chloral hydrate allays the itching of the skin often found annoying in scarlet fever.

"Fourth, when chloral hydrate is given routinely during the febrile period, and for some days thereafter, postfebrile nephritis appears to be less frequent.

"Fifth, this study would seem to justify the more extended use of chloral in the treatment of scarlet fever, and a more detailed study as to how it acts on the kidney itself."

Chloretone. Wynters[1] of London, after discussing the pharmacology of chloretone in an article, says that on account of its local anesthetic effect he was prompted to employ this drug in *painful and irritable conditions of the stomach,* such as gastritis, cancer, gastrodynia, ulcer, and especially in those cases of pain, vomiting, and hematemesis so frequently associated with chlorosis and scarcely yet completely removed from the category of gastric ulcer, with which they are by no means identical. In doses of 5 grains or more in petroleum emulsion it has a remarkably soothing effect on pain and vomiting and exercises a deterring influence on fermentation, resembling in this carbolic acid. It was while using chloretone for this purpose that its hypnotic effect became apparent, and he has since employed it satisfactorily in 10-grain doses simply to procure sleep, though the state of quietude induced by the smaller doses is itself a very

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(1) Lancet, Mar. 30, 1907.

great alleviation of painful and protracted illness, such as the gastric conditions mentioned.

The local anesthetic effects have been found of value in vaginal pruritis as exercised by a .4 per cent. solution in warm water, or by 5-grain suppositories in hemorrhoids. The sedative effect on the brain, similar to that of the bromids but more rapidly induced, associated as it is with a similar effect on the stomach, led to its early employment for sea-sickness and it is in connection with this distressing malady that its reputation has chiefly been established. When taken at intervals in 5-grain doses, long voyages have been undertaken without discomfort, such, for instance, as that across the Atlantic. The drug was taken about twenty minutes before meals two or three times a day during rough weather and the journey was completed without a qualm. A more general knowledge of this remedy will certainly save a large amount of discomfort and in those who suffer continuously will enable journeys to be undertaken which were formerly dangerous or actually impossible.

In Chorea. In the past year the opportunity has occurred of exhibiting the drug in some 14 cases of chorea, and the result has been so striking and uniform that, though the number is small, it is worth making known that those who have wider opportunities may further test its reliability. In these cases, both boys and girls between the ages of seven and twelve years, 5 grains of chloretone in half an ounce of petroleum emulsion were given three times a day for two and sometimes three days; there was in all of them such a marked diminution of the choreic movements that the dose was then halved and sometimes given only twice and even once a day, according to the severity and progress of the case. The number of days in which the drug was continued varied from five to ten, by which time it was omitted and either iron wine with arsenic or cod-liver oil was substituted to meet the anemia and feebleness which usually accompanied the disease. Under this treatment the duration of choreic movements was limited to nine days and the stay in the hospital to three weeks on an average. This is a great advance in the treatment of chorea, which even with the advantage of hospital régime usually extended to double and treble that time. These advantages consist in rest in bed with isolation and liberal dietary. When convalescing the patients were encouraged to knit or crochet, or to use the hands in some such manner so as to practice purposive movements and also as a test of steadiness.

Many of the patients on admission were unable to feed themselves, experienced considerable difficulty in speech, and in some cases needed padding in their cots to prevent bruising in their uncontrolled movements. It was found that those patients who came under treatment early, benefited most. Of the fourteen who took chloretone, 2 were removed from the hospital before they were quite recovered on account of contracting roetheln, and 2 others resisted the treatment for a longer time—one a girl aged ten years who had suffered from chorea for three years with short remissions, and another girl, aged seven years, who, after four months' chorea before admission, appeared rather to be cured by the relief of constipation, which had been a marked feature, this being effected in 21 days.

With any comparatively new drug exerting marked beneficial effects, the question always arises as to drawbacks, and in the present instance there are some, though not of serious account. Two of the cases exhibited exfoliation of the skin on the hands and heels, which gave rise to a suspicion of scarlet fever—one after ten days in the hospital without fever or rash and the other shortly after removal on account of roetheln, of which there had been an outbreak in the hospital. The other 12 cases did not show this, and the retention of one such case in the hospital and subsequent removal to the convalescent home did not lead to communication of scarlet fever to anyone else, so this exfoliation of the skin may be regarded as an occasional effect of the drug.

In two of the earlier cases treated, possibly owing to the physiologic effect of chloretone being carried rather too far, there was marked somnolence, the child lying in any attitude in which he was placed and rousing only to take food. This passes off in a few hours on discontinuing the drug. The only other objection taken account of was the cost ($1 an ounce is somewhat expensive in hospital work), but considering the small quantity used and the comparative infrequency of the cases it is not serious, and with increased demand it will no doubt be reduced.

As regards the permanency of the cure further experience is required; one of the cases cited was readmitted in about three months with a relapse, and on the other hand another was successfully treated which had relapsed after treatment by arsenic.

Chloroform. Besides the regular use of chloroform as an anesthetic there are numerous conditions in which it may be employed advantageously for symptomatic indications. Fritz Lämmerhirt[1] discusses such conditions in detail. First of all he places convulsions of cerebral origin. In the eclampsia of pregnancy the beneficial action of chloroform is now generally recognized. In the convulsions of infancy and childhood its recognition is not so general, although the fear of using the drug on the sensitive system of the very young is, according to the author, groundless. A few drops of chloroform poured on a handkerchief and inhaled by a child furnished the best remedy for infantile convulsions. Of course it is necessary to distinguish the various forms of convulsions in children. For instance, the convulsion may usher in some acute disease, as scarlet fever or pneumonia. In this case it is not always advisable to give chloroform and check the convulsion, since simpler remedies, such as hydrotherapy, will often be found sufficient. In extreme cases, however, chloroform is indicated.

Another kind of convulsion appears in the course of acute disease. In these cases we must consult the condition of the heart before resorting to chloroform. This applies especially to pneumonia. If, however, the heart action is good, then chloroform is less valuable on account of the persistency and violence of the convulsions, and the author recommends chloral to follow the momentary action of chloroform in order to assure a more prolonged sedation. In meningitis chloroform may be given to check the convulsions. He prescribes chloral in combination with pyramidon as follows:

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(1) Therap. der Gegenwart, xlvii, No. 8.

℞	Chloral hydrate	0.5—1.0	grs. viii—xv
	Pyramidon	0.2—0.3	grs. iii—v.
	Mucilage of Salep, ad. 30.0	30.0	f℥ i

M. Sig. Teaspoonful every half hour at first and later every 2 hours.

Collapse, of course, is a contraindication to the use of chloroform. In epileptic convulsions chloroform is not indicated except in cases where the attacks follow each other at such short intervals as to endanger life.

Next to general convulsions of cerebral origin must be placed the local convulsions of the unstriped musculature as seen in the various forms of colic, gastric colic, renal colic, etc. In all these cases morphin is in general the most useful remedy, but when it fails, as it does occasionally, then chloroform inhalations are in order.

Another rather special field for the use of chloroform is furnished by the excessive labor pains so often met with in obstetric practice. Morphin is generally employed in these conditions, but the author recommends the cautious use of chloroform in order to moderate the uterine action.

When employed symptomatically chloroform should not be pushed until complete anesthesia supervenes. All that is needed as a rule is a mild stupor in which the patient still responds to stimuli, answers when called, etc.

Chlorids. Many reports have followed the observations and writings of Strauss, in Germany, and of Widal, in France, in 1902 and 1903, on the possibility of *edema* being due to the presence of abnormal quantities of sodium chlorid in the tissues. The weight of evidence thus far presented indicates that retention of chlorids frequently is an important feature in the edema of nephritis, but it is not always possible to demonstrate its relation to the edema. The retention of chlorids seems to depend entirely on the inability of the kidneys to excrete them, and the water retention is secondary to this. Chlorid retention has also been observed in some cases of dropsy in heart disease and with some edemas occurring in patients with acute inflammatory disorders, but here it is not so well established that the observed chlorid retention is more than can be explained as due to the retention of the fluid in the edematous parts. In any case the treatment of renal dropsy by "dechloridization therapy" seems to be warranted on several grounds. In the first place, the œdema is relieved by this means; secondly, there is considerable evidence that chlorids may act injuriously on the diseased kidneys, and, furthermore, there is no danger in reducing the intake of chlorids to as low a figure as can be done by a carefully selected diet.

Cimicifuga. A favorite remedy with many doctors is cimicifuga for those cases of *suppression of the menses* due to cold, those dependent on sudden shock or fright and those arising from grief or other mental emotions. Such suppression is attended with dull headache, severe backache, soreness in the muscles, pain in the limbs and "bearing down" sensations in the pelvis. A few doses of the fluid extract of cimicifuga (1 dram every four hours) will bring on the flow quickly if accompanied by hot foot-bath and warm douche continued for half an hour.[1]

Cinnamon Oil. Ross[2] states that for nearly sixteen years he has employed cinnamon in various forms in treating *influenza,* but for many years now he has always used the oil of Ceylon cinnamon bark. There is another oil of cinnamon on the market, extracted, it is believed, from the leaves of the plant, which though rather cheaper should be avoided, and the oil of cinnamon bark only should be used. We all of us have heard only too often of bad cases of influenza where the unhappy patients have been confined to the beds or their rooms for a fortnight, three weeks, a month, or even longer. Such a long detention on the sick list cannot be a pleasant experience, and the writer asserts he is perfectly convinced that it ought never to occur. He employs these words advisedly, for he altogether declines to believe it can be ascribable only to a singular series of coincidences that now for nearly sixteen years, during which time he has invariably treated influenza with cinnamon, his patients have generally been perfectly fit to return to their vocations, whatever they may have been, within three or four days, and that in no single case has a patient suffering from influenza been on his hands for more than a week.

The treatment for which he suggests a fair trial, and which he invariably adopts, is abundantly simple, and is

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(1) Am. Jour. Clin. Med.
(2) Lancet, Nov. 3, 1906.

as follows: Let the influenza patient take 12 drops of cinnamon oil and repeat the dose in an hour; two hours after this second dose let the patient take 10 drops every two hours without intermission till the temperature falls to normal. After the temperature has fallen to normal, or possibly a little under, let the patient take 10 drops of the oil three times a day for a day or two. In every disease, probably, the sooner the patient is placed under treatment the better, and this is preëminently the case in influenza. And if a patient suffering from this disease is systematically treated with cinnamon oil in the manner above described within three or four hours from the onset of the disease it will probably be found that the temperature will have returned to normal within twelve hours; but if the patient is not put under treatment for a couple of days it will probably be at least twenty-four or thirty hours before the temperature becomes normal. After the temperature has fallen to normal the patient should remain in his room for at least twenty-four hours, and if possible should remain indoors for a further period of two or three days. But many cases that had been submitted early to treatment, cases of robust persons under forty years of age, and whose engagements were pressing, the author has permitted to return to their occupations after only twenty-four hours' rest, and so far without any untoward results. But he always advises that patients should remain indoors for two or three days if they possibly can. Especially should they be urged to do so in those cases in which the disease has been allowed to run for a day or two before being submitted to treatment. Each dose of cinnamon oil should be taken in half a wineglass or a wineglass of water to lessen its pungent taste.

It is hardly necessary to add, perhaps, that Ceylon cinnamon bark oil can be easily obtained from any respectable druggist in any town.

Cocain. J. L. Thomas[1] presents a series of cases in which he has removed fifty-five *goiters* under local anesthesia (cocain 1 per cent.), and one goiter in which no anesthesia was used. All the patients recovered. He has used a general anesthesia for goiter seventeen times,

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(1) Lancet, April 27, 1907.

including five for the exophthalmic variety. Of this latter series three died; one from respiratory complications, one from hyperthyroidism (both exophthalmic), and one from sepsis. Another exophthalmic patient died suddenly just as she was about to be operated upon but before any medicament had been used. The cause of death was unknown. The author always uses Kocher's collar whenever possible, as it gives ample room and exposes the blood-vessels at right angles to their courses, and leaves a scarcely perceptible scar. The position of the patient is on an inclined plane, the higher end being under the shoulder while the head rests slightly extended on a cushion. Full operative details are given by the author. Everything being ready, the neck is marked by drawing the edge of the scalpel very lightly round it in the position which later forms the collar incision; by this maneuver no pain is inflicted, but sufficient blood exudes to form a thin red line under which from one to two drams of a 1 per cent. solution of cocain are injected by means of Kocher's syringe from end to end so as to form a continuous subcutaneous ridge. As soon as the injection of cocain is completed the collar incision is made at once and the upper flap is first dissected upwards, and consists of skin, subcutaneous tissue, platysma myoides and the fascia covering the anterior surface of the neck muscles. Every blood vessel exposed is first clamped by two Kocher forceps and divided between them so that the amount of blood lost is a mere trifle. The lower flap is then formed. The author notes that in certain cases it is necessary to divide the sternohyoid and sternothyroid muscles in order to facilitate the delivery of the goiter; in order to prevent atrophy of these muscles they must be divided near their upper or lower ends according to the exigencies arising, and by so doing the nerve supply to the muscles will not be interfered with. In order that the condition of the neck should be restored as nearly as possible to its normal appearance one must endeavor in the first place to restore to their normal conditions every divided muscle by carefully reuniting the ends, and in the next place to sew the skin together by means of a very fine needle to avoid puncture scars, and lastly the drainage tube must be removed at the expiration of from eighteen to twenty-four hours, together with the skin sutures. Special attention must also be given to accurate apposition of the edges of the aperture left by the removal of the drainage tube, otherwise slight puckering will take place.

In Labor. Some years ago Fliess[1] called attention to the genital reflex through the nose and indicated certain points which he called "genital points," which were situated on the surface of the mucous membrane and were more definitely located at the anterior extremity of the inferior turbinates and the adjacent septum and the tubercle of the septum. These areas he found to be notably congested and hyperesthetic in certain cases of dysmenorrhea. These cases he designated as "nasal dysmenorrhea," because artificial irritation of these portions of the wall of the lower nasal meatus was found to increase the dysmenorrheal pains, and, on the contrary, their cocainization caused these pains to disappear.

These observations were confirmed by Schiff at the clinic of Professor Chrobak of Vienna. At the same clinic Jerusalem and Faulkner *(Wien. klin. Woch., April 12, 1906)* have quite recently terminated a new series of researches which demonstrate the possibility of inducing contractions of the gravid uterus by massage of the nasal genital points with a sound. In like manner their stimulation by faradization or galvanization would bring on labor, or even produce abortion. They also conducted other experiments by applying cocain to the genital points on a tampon during the progress of labor. As a result they were satisfied that applications had a decided power to suppress the pains of the first period, but without influencing those of expulsion. They cited one case of a robust woman who was delivered of a child (with a small head, though a normal passage) and in which the entire labor, including the period of expulsion, was unattended by any pain whatever, on account of this cocainization of the genital area in the nose.

In Dental Anesthesia. Escat,[2] of Toulouse, having observed that in all cases in which he applied tampons of

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(1) Rev. franc. de med. et de chir., Sept. 25, 1906; N. Y. Med. Jour., Dec. 15, 1906.

(2) Bull. de laryngol. et d'odontol., January, 1907, through La Clinique.

cotton, moistened with cocain solution, to the lower portion of the nasal chambers, there was produced anesthesia of the incisors and canine teeth on the side of the anesthetized nasal fossa, he subsequently employed this method of relieving pain and of producing anesthesia of these teeth in more than five hundred cases with notable success. The anesthesia commences a quarter of an hour after the introduction of the tampon, attains its maximum in about half an hour, and if the tampon be removed at this time it persists for another quarter of an hour. This dental anesthesia arising from within the nose is obtained by the simple application of a tampon of absorbent cotton the size of an almond, moistened with a 10 per cent. solution of cocain hydrochlorid. This, however, is not to be simply introduced within the nasal chamber but placed carefully in the anterior portion of the nasal fossa between the septum and the anterior extremity of the lower turbinate. The patient should bend his head forward during the introduction of the tampon so as to avoid swallowing a few drops of the solution which may run along the floor of the nasal chamber. He should keep this position for twenty minutes or half an hour. The manner in which this application may act is inferred from the anatomic investigations of M. Ledouble, who found that the anterior dental nerve does not always have a fixed position in a bony canal but that it is most frequently superficial and immediately subjacent to the pituitary membrane, just at this place where the nerve turns in its course to avoid the nasal fossa, and where it emits the branches destined to supply the incisors and canines. In fifty-five crania examined by Clermont the bony canal was well formed in twenty-nine instances, but with a thin wall, which was transparent and easily broken down; twenty-seven times the canal was found to be only a groove. Furthermore, the nerve filaments of the mucosa of the hard palate in this region are supplied by the nasopalatine, an ultimate branch of the sphenopalatine nerve, which in order to enter the anterior palatine canal are obliged to spread along the floor of the nasal chamber and are therefore brought directly in contact with the cocain. This observation is of interest both to rhinologists and dentists, as it affords a practical means of relieving the pains of pulpitis and gingivitis in this region. It also affords a method of producing local anesthesia which may be utilized for extracting the incisors and canines or for operating for caries, removing nerve pulp, etc. It may have a limited application in facial neuralgia when reflex irritation is produced by caries of these teeth.

Action on the Viscera. Kast and Meltzer[1] point out the apparent discrepancy between the statements of Lenander and other surgeons who have found that the abdominal viscera, even in the inflamed state, have no sensibility for painful stimuli, and the constantly occurring clinical observation of severe abdominal pain in many different conditions. By an extensive series of animal experiments the authors were able to show that while it was true that surgeons who operated under local anesthesia did not find that manipulation of the intestine or other abdominal viscera was painful, this condition was the result of the injections of cocain used to anesthetize the skin for the abdominal incision. In animals (dogs and cats) the injection of 0.02 to 0.03 gr. of cocain sufficed to render painless, stimuli to the intestines that, without the cocain, would have been resented. It seemed to make little difference whether the site of injection were close to the seat of operation or at a distant part of the body, such as the extremities. Intramuscular injections were found to be more promptly effective than hypodermic injections, and the authors express the view that the mode of action is through the medium of the circulation. The sensibility of inflamed organs in untreated animals was found to be greater than that of uninflamed organs, but the action of the cocain injections was equally pronounced in such cases. Another observation made was that the cocain injections had a distinctly quieting effect on the postoperative restlessness of animals that had been subjected to ether anesthesia.

In Neuralgia. Scherle and Fenari[2] have employed an alcoholic solution of cocain in the treatment of trigeminal neuralgia. The injections are made deeply in the tissues around the trunk of the affected nerves. They are pain-

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(1) Berliner klin. Woch., May 13, 1907.
(2) Bull. med. de l'Algerie, La Tribune Med., Jan. 5.

less and harmless. Local anesthesia is produced. The muscular spasm may occur from time to time, but is not attended with pain.

Colchicin. Colchicin exercises an elective action on the nervous system of the secretory organs, and it is a very remarkable fact that when salicylate of methyl, distilled from the bark of the betula lenta, is associated with colchicin, effects may be obtained in gouty and some rheumatic cases that would necessitate much larger doses of either of the drugs used alone.

The alkaloid of colchicum possesses all the properties of colchicum seed or corme, without offering any of the inconveniences of the uncertain preparations made from the plant. The physiologic strength of the tincture or wine varies to a great extent; the alkaloid alone can be mathematically dosed and its effects accurately controlled.

Collargol. The old remedies for *night sweats in phthisis* act only symptomatically. Since, as Wilke[1] says, the sweats must be regarded as a biochemic reaction of the organism against the invasion of the blood stream by toxic substances, a causal remedy must be able to depoison the bacterial toxins and thus remove the entire symptom complex—the chills in the afternoon, the evening fever and the night perspiration. *A priori,* such an effect is, according to Wilke,[1] to be anticipated from collargolum, as it has been shown that it acts catalytically on bacterial products.

Five phthisic patients in the second stage, with severe cough, mucopurulent expectoration and severe night sweats, four of whom had moderate or high fever, received a teaspoonful of 1 per cent. collargol solution four times daily. After the use of ½ dram collargol, fever and sweats disappeared and had not returned two months later. The importance of this result with reference to nutrition and strength is evident. When severe enteritis hinders absorption, inunction or intravenous injection of collargolum is preferable to its use by mouth.

In General Infections. In a paper read before the San Angelo District Medical Association I. L. Van Zandt[2] of Fort Worth reviews some of the publications on collargol and records his own experience with it in septicemia, scar-

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(1) Medico, No. 52, 1906.
(2) Texas State Jour. of Med., March, 1907.

latina, phlebitis, erysipelas, bubo, paronychia, acute salpingitis and exacerbations. He also gave it in thirteen cases of typhoid fever, with an average of 19.8 days from the first to the last visit. This includes one with intercurrent pneumonia and two who suffered a setback from excitement and overeating. In two cases the temperature had fallen to 99 degrees; when the remedy was discontinued the temperature remained stationary for a few days and then again rose till collargol was resumed, whereupon fever disappeared in three days. In most cases there was marked improvement with general wellbeing in two or three days after beginning the treatment, the fever sometimes coming to a very abrupt termination.

Copper Salts. In a special article, *Medicine* for March, 1905, gives a resumé of the studies of Dr. Moore of the Department of Agriculture, Washington, on this subject. It has been of late almost forgotten. Copper sulphate shows fine *germicidal properties.* Placing contaminated water in a copper vessel will destroy algæ and typhoid bacilli in a few hours. The small quantity required renders it available for purifying contaminated water supplies, as it is tasteless and noninjurious in amounts necessary. The sulphate is generally used, but the arsenite is receiving some attention of late years. It is useful in doses of 1/1000 gr. to 1/100 gr. in intestinal affections given every hour. In functional anemia 1/50 gr. to 1/25 gr. may be given with benefit. The sulphate or bluestone may be used locally either as a pencil or ¼ to ½ of 1 per cent. solution on inflamed or ulcerated surfaces. Two to five grains to the ounce of water may be used in an astringent lotion to inflamed mucous membranes, as leucorrhea, gonorrhea and endometritis. Ten to twenty grains to an ounce of water can be used with advantage as an injection in dysentery.

As a Germicide. Moore and Kellermann[1] having (in 1894) proved the destructive power of copper sulphate upon the algæ, of which several species are killed by solutions of one-millionth, next sought to extend this action to pathogenic microbes. Having ascertained from their laboratory experiments that the typhoid bacilli are destroyed by a dosage of one to one hundred thousand, they

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(1) Bull. général de therap., Nov. 23, 1906.

tried to make use of this observation on a large scale for the sterilization of the drinking water of cities. Lacomme and Lancelot at first, and Clark and Gage subsequently, have shown that the use of such weak solutions only gives a false sense of security. Experiments made with colon bacilli, Eberth's bacillus, the bacillus of paratyphoid, *Bacillus subtilis,* a bacillus isolated from these waters and the yellow staphylococcus, have proved that the addition to such infected waters of copper sulphate does not give any adequate security against infection, and indeed the solution does not become toxic to the microbes except in solutions too strong to be used for drinking water.

In Typhoid Fever. J. F. Stevens[1] of Lincoln, Neb., reports a series of forty-three cases of typhoid fever treated with the sulphate of copper. A stock solution was made of about 30 grains of the drug to the ounce of water (6 per cent.). Of this two-drop doses were given every hour, day and night, with a half glass of water. If the stomach proved intolerant the dose was reduced to one drop in one-half glass of water every two hours. It occasionally happened that it was necessary to reduce the dose still more, making it only one-half drop once in two hours. The drops of 6 per cent. solution contain about one-sixteenth grain of the sulphate. In point of fact the majority of the patients could take about one drop every two hours. Patients who were seen during the first two or three days of the onset of the disease received large colonic flushings of sulphate of copper solution once in three hours for two days. In these injections 5 grains to the quart were used. If this proved irritant a less quantity was to be used in subsequent flushings. If the tongue became dry, which it seldom did, the copper solution was moderately acidulated with sulphuric acid.

The diet was uniformly buttermilk, a glass once in four hours. Between the buttermilk Stevens sometimes permitted soups to be given, carefully prepared, skimmed and strained. Fruit juices were invariably given, following somewhat the desire of the patient as to which particular one. Tomato juice, a wineglassful every two hours or three, in a majority of cases proved to be very acceptable

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(1) Western Med. Review., November, 1906.

and certainly very beneficial. The temperature was reduced when necessary by general sponging and ice bags to the abdomen. General nursing measures were instituted as individual cases demanded. When the disease abated, temperature became normal, tongue cleared, patient became bright, with conditions generally pointing to the immediate nearness of convalescence, the copper was dropped and the patient given 1/240 of a grain of strychnin once in three or four hours. After the temperature had been normal about eight or ten days the pulp of a baked apple, a little rice, tapioca, soft-boiled eggs, junket, blanc mange, etc., were gradually introduced into the diet until perfectly normal conditions called for the food of health. This entire list of cases was characterized by an evenness that was very gratifying.

Cotarnin Hydrochlorid. Migoul[1] states that cotarnin hydrochlorid (stypticin), being an opium derivative, has the advantage of being at once a vasoconstrictor and an *analgesic* agent. It acts simultaneously on the uterine vessels and on the pains. He has obtained better results from its employment in the excessive menstruation of young girls, with or without dysmenorrhea, than from any other remedy. He does not recommend, in such cases, going above the daily dose of 0.30 gram (gr. v.), for fear of stopping the menstrual flow. He advises preliminary treatment for one week before the date of menstruation, giving half the dose, or 0.15 to 0.20 gram, during the day, in three or four tablets. In symptomatic hemorrhages attending uterine lesions, metritis, deviations, etc., this agent seemed to be the best of the vasoconstrictors. On leucorrhea it has no action. Its use does not prevent or take the place of curettage if this is indicated. In interstitial and submucous fibromata the profuse bleedings are treated with the agent, with the most satisfactory results. In five cases the bloody discharges between the menstrual periods completely disappeared. In two other cases in which the hemorrhages recurred he was obliged to increase the dose to six or seven tablets (each 0.30 gram or gr. v.). The remedy seems to have no influence in causing atrophy or the disappearance of the fibroma, but the latter is arrested

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(1) Bull. général de therap., April 8, 1907.

three, in a majority of cases proved to be very acceptable in its evolution, and if an operation should be decided upon the uterus is placed in the best condition for operating. In cancer of the uterus it diminishes the hemorrhages, but its action on the pain is problematic.

In Uterine Hemorrhage. H. P. Merville of Milwaukee, Wis., writes that he prescribed stypticin in a case of hemorrhage following curettement, and it was successful in twenty-four hours. He has also used stypticin in two cases of hemorrhage of the bowels in typhoid fever during the third week. The hemorrhages were copious and exhaustive in both cases, but complete recovery resulted. Dr. Merville says that the effect was so prompt that it was a surprise to him. He is greatly predisposed in favor of stypticin.

Creosote. In condemning therapeutic nihilism, particularly with reference to *pneumonia,* N. P. Coppedge[1] of Margarettsville, N. C., made the statement that in no other disease can experimentation with drugs without reference to physiologic action or previous therapeutic applicability be more completely justified than in pneumonia. If all would do a little experimenting and report their cases he believes a treatment of considerable efficiency would be discovered.

The author sets the example by reporting the results of his experiments in treating pneumonia since his graduation three years before. In every case he gave creosote (Merck). The only patient lost was an aged woman, in whom the infection was so severe that after the initial chill she did not recover consciousness during the five days of her illness. Many of his patients he saw only once, so efficient was the treatment and so quickly did they begin to convalesce; others ran a fairly typical course. Some improvement, however, was almost always apparent within a day or two after commencing the use of the creosote. The drug must be given in an alcoholic menstruum—3 to 5 minims of creosote every three hours or so. He advises giving sweet milk also, as the creosote is incorporated in the curd and is slowly dissolved and in that way does not irritate the stomach so much. The author concludes as

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(1) Charlotte Med. Jour., 1906.

follows: "I have used other creosotes than Merck's (beechwood), but did not get such good results. It usually takes forty-eight hours for the creosote to get in its full action, but it usually shows some effect in twenty-four hours."

Digitalin. Huchard[1] recommends the crystallized digitalin in preference to the other preparations of the drug. He says the infusion made from the leaves contains such varying quantities of the active principle that often dangerous symptoms may arise by its internal administration. The disadvantages arising from the use of digitalis are commonly said to be its slow action, its slow elimination and its accumulation in the body. These so-called disadvantages need, however, some modification; thus the cardiac action of digitalis is rapid—ten to fifteen minutes after administration by the mouth its tonic effect on the heart may be noticed; its diuretic action is certainly slow, from twelve to forty-eight hours elapsing before its tonic effect on the heart may be noticed. The slowness of elimination of the drug may be neglected, since in those cases in which it is administered for long periods of time it is given in such small doses (0.05 to 0.1 milligram) and these small doses are gradually destroyed in the body; there is therefore very little danger of it accumulating. These so-called disadvantages of digitalis the author considers are real advantages, as they insure a continued action of the drug on the heart.

The digitoxin of Schmiedeberg and that of Cloëtta are not products of definite and constant composition and their employment may give rise to dangerous symptoms, or at least to inconstant effects. From these and other considerations the author concludes that the only real active principle of digitalis is the crystallized digitalin. Digitalis appears to act differently according as it is given to a healthy or a sick patient; in the former it has a very feeble cardiac action and has no action whatever on renal elimination; when, however, given to a patient who is ill and suffering from dropsy, it has considerable cardiac and diuretic effect. From these considerations the author concludes that in studying the physiologic action of a drug

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(1) Jour. des Prat., December, 1906.

its effect not only on animals but also on healthy and sick patients should be investigated.

There are three ways in which crystallized digitalin may be prescribed. First, in massive doses. Fifty drops of a 1 to 1,000 solution should be given once or twice in one day in those cases where asystole is threatening, and where there are edema, visceral congestions, deficient urinary elimination, etc. After thirty-six or forty-eight hours abundant diuresis sets in, and the cardiac contractions increase in strength, with a resulting disappearance of visceral congestions and edema. If the action of these doses be insufficient, after an interval of eight to ten days the same quantities may be again administered. Should the cardiac contractions still remain feeble after the disappearance of the edema, 2 to 4 drops of the same solution may be given daily for one to three weeks after a fortnight's interval. Secondly, in small doses; these are indicated in cases of palpitation, cardiac erythism and for the dyspnea of mitral stenosis (during compensation). From 5 to 10 drops of the same strength of solution should be given for five consecutive days, and then omitted for three or four weeks, when these doses may be recommenced. Thirdly, in very small doses as a cardiac tonic. From 3 to 4 drops of the solution may be given daily for weeks or months, omitting the dose every two or three weeks for one or two weeks. When a rapid action is required, crystallized digitalin dissolved in oil may be injected under the skin without any subcutaneous irritation; from 0.12 to 0.5 milligram may be so injected. The author finally concludes his paper with the remark that, just as there are no substitutes for digitalis, so there are none for digitalin.

In Angina Pectoris. Fiessinger,[1] from a consideration of the possibility of there being cardiac distention in cases of true angina pectoris, has treated patients affected with this trouble with small doses of digitalin, and in many cases with very great benefit. Since in these patients arterial tension is frequently high, and is still further heightened during the paroxysms, only small doses of digitalin should be given; and to combat the high arte-

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(1) Jour. des Prat., Paris Med. Jour., March, 1906.

rial tension theobromin may simultaneously be given. The author advises that five drops of a 1 to 1,000 solution of crystallized digitalin be given daily, and that 0.5 gram of theobromin be administered before the mid-day and evening meals. After ten days the digitalin should be stopped, to be resumed after ten or fifteen days. This treatment is not always successful, but appears to have its best effects in those cases of angina in which, between the attacks, the patient suffers from dyspnea on exertion. Patients should be very abstemious as regards eating and drinking. If fat, suitable treatment should be carried out to reduce the excess of adipose tissue; and by these means the author has been able to obtain "cures" in men of seventy years or upwards.

Digalen. Viel[1] experimented with digalen (digitalinum soluble, Cloetta) in a number of cases of acute cardiac insufficiency and chronic *cardiac affections.* He used intravenous injections for acute conditions, and administrations per os for chronic cases. Subcutaneous injections were very painful and frequently produced inflammatory reactions, and were seldom used. Intramuscular injections were less painful than subcutaneous, but more so than intravenous. For protracted internal administration he sees no advantage of digalen over other digitalis preparations, since gastric disturbances frequently set in, and diuresis is produced only temporarily. In acute cardiac affections (especially cardiac insufficiency resulting from infectious diseases) it is a most useful remedy, and may safely be given immediately before or during a crisis (*e. g.,* in pneumonia). He uses 5 c.c. for each injection, and repeats the dose whenever indicated.

Action. Neave,[2] from experiments with digalen on frogs, concludes that it produces the characteristic actions of digitalis; but it is less powerful and much more expensive than the official tincture of digitalis. It is also much less powerful than corresponding quantities of crystalline digitoxin. It is less irritant than these preparations, but it is doubtful if it possesses any other advantage.

Dionin. F. R. v. Alt,[3] of Vienna, reports favorable

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(1) Muench. med. Woch., No. 4, 1906.
(2) The Scottish Med. and Surg. Jour.
(3) Woch. f. Therap. u. Hygiene d. Auges, 1906, No. 11.

results from the use of dionin locally applied for the treatment of *retinal hemorrhages.* In corneal opacities, also, dionin was most serviceable and was well borne for months. In his first reported case a woman twenty-eight years of age came into the clinic with a history of sudden loss of sight in the right eye. As the left eye had been disabled from childhood, her situation was precarious. Five fresh hemorrhages were found in the macula. She was treated with gray glasses and local applications of a 10 per cent. solution of dionin, 1 drop with light massage. The external action was strong and persisted from six to eight hours. The improvement was gradual, in five months the sight improving from 5/30 to 5/12. A second case in a woman of thirty-five gave similarly good results. In the prolonged use of dionin for corneal opacities he recommends a weekly dose of .005 gm. ($^1/_{12}$ gr.) dionin in substance. This is followed by light massage, and the dionin phenomena follow. After a few weeks the patient is able to apply the same dose in solution or salve form. The patient should then present himself for examination every eight to fourteen days for control.

As a result of his investigations, the author asserts that: 1, By using dionin in this manner (one week intermissions) a dose equivalent to 1 drop of a 10 per cent. solution can be used for months without any loss of efficiency; 2, superficial corneal scars (maculæ corneæ) which have persisted for years may be rendered clear; 3, dionin in fresh retinal hemorrhages is of service in aiding healing; 4, it has no influence over old hemorrhagic lesions.

In Iritis. Weeks, Lloyd-Owen and Bulson all report favorably on the absorptive and anesthetic qualities of dionin in iritis, corneal ulcers, and glaucoma, state Walter L. Pyle and Helen Murphy,[1] of Philadelphia, in reviewing advances in ophthalmic therapeutics. Bulson also advises its use in intraocular hemorrhage and as a substitute for discission in secondary cataract. In a case of separation of the retina of two months' standing Darier has obtained reattachment after injecting .02 gm. ($^1/_3$ gr.). He also finds dionin valuable in chronic conjunctivitis, in infected operation wounds, and in acute glaucoma when

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(1) Amer. Med., February, 1907.

operation is refused, or as a preliminary to operation. He uses it to assist in loosening foreign bodies in the cornea through the edema it brings about, and, like Bulson, after cataract operations. Hinshelwood claimed that it is the most powerful means at our disposal for clearing up corneal opacities. V. Arlt uses it in powder form with powdered atropin in the conjunctival culdesac in the treatment of old synechias. Ryerson reports rapid absorption of hemorrhages and cataractous lens matter from its instillation.

Distilled Water. Marcus[1] tabulates the findings in regard to the metabolism in a patient with *chronic nephritis* during periods in which she drank ordinary water and others in which distilled water only was taken. During the ten days during which the patient, a woman of 35, drank only distilled water, a total of 12 liters (quarts), the output of urine was twice the amount voided during the corresponding periods with ordinary or mineral water. The specific gravity of the urine dropped to nearly one-half. The total amount of albumin eliminated increased a trifle during the ten days, while the blood became more condensed. The increased diuresis was not accompanied by an increase in the amount of solid constituents in the urine, but rather the reverse. This speaks against von Noorden's conception of the "flushing out" of the system under copious diuresis.

Electrotherapy. John D. Schoonmaker[2] calls attention to the importance of recognizing the limitations of electricity in therapeutics, and deplores the extravagant claims made for this valuable therapeutic measure. He calls attention to the fact that the popular notion that electricity is a mysterious life-giving force capable of working miracles on the human body should be laid aside for a clearer view of its particular actions in therapeutics. He refers to electricity as a source of heat, light, magnetism, and x-rays, also its use for the electro-cautery, and adds that "electricity is always the same in itself, but, like other agents, it may be given in different dosage and in different ways so that entirely different therapeutic results may be obtained." He calls attention to the fact that success de-

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(1) Berlin klin. Woch., xxvii, No. 2.
(2) Kansas City Med. Index-Lancet, April, 1907.

pends on the personal skill and judgment of the physician employing it, and states that certain cases "such as neuralgia may be treated successfully either by galvanism or static electricity or by the Roentgen rays," according to the skill of the operator in employing either. The uses to which he delegates electricity are as follows:

"1. *To Produce Local Necrosis, or an Eschar.* Limited applications may not go so far as to cause tissue or cell destruction, and may only produce vascular changes, or, in other words, they may act as rubefacients or counterirritants. Powerful currents, if passed through the body, will, on the contrary, abruptly terminate and abolish all physiologic processes.

"2. *To Disturb the Electrical Relations of the Elements of Nerves and Muscles.* This is shown by muscular contractions, produced when a nerve trunk and a voluntary muscle are brought within the influence of a current of appropriate strength. It is to be observed here that the electricity primarily gives no additional strength to the nerve or muscle, but simply calls into action energy which is already there. However, by its power to call into play the latent energy of the muscle, it causes movements of the muscle, which in turn leads secondarily to increased blood supply and improvement in nutrition. Illustrations of this are very common, as in treating muscular paralysis.

"3. *To Modify Metabolism.* Its effects in this direction are well illustrated by the Roentgen apparatus. Exposure to the *x*-rays causes local nutritive changes in the skin, the lanugo hairs fall out from the operator's hands, the skin becomes glossy and thin from the atrophy of the glands, chronic ulceration may occur, which in turn may be followed by malignant disease. It has been repeatedly observed that unguarded exposure of the body to the *x*-rays causes degenerative and atrophic changes in the deeper parts, especially in the fundus of the eye and in the generative organs. In therapeutics this inhibitory and atrophic action may be skillfully directed against cancerous or other new growths. The latter having less power of resistance than normal tissue are made to undergo retrograde change and to wither away. This is especially noticeable in epithelioma of the skin, and also in accessible organs such as the rectum and mammary gland.

"4. *To Act as a Temporary Stimulant to Nutritive Processes,* and especially to the nervous system and the circulatory apparatus. This is illustrated by the good effects on nutrition produced by the static current and electric bath, and anemia, neurasthenia, atonic dyspepsia, chronic rheumatism, and incipient tuberculosis.

"5. *To Accomplish Certain Local Effects.* This is done by stimulating physiologic functions, as is shown in the use of electricity to increase the flow of milk from the mammary gland in the nursing woman. The use of the rectal electrode in overcoming constipation I have called attention to elsewhere. The increased function of the ovaries produced by the induced current or by the static spark is very useful in overcoming dysmenorrhea. The systematic application to the scalp causes improved nourishment of hair follicles, and not only prevents baldness, but also actually increases the growth and thickness of the hair.

"6. *To destroy Parasites on the Surface of the Body.* Many infectious diseases of the skin caused by vegetable microörganisms are promptly cured by the *x*-rays. Among these I may mention tinea favosa and tricophytina, tinea barbæ, trichorrhexis nodosa, impetigo contagiosa, acne pustulosa, pityriasis versicolor, lupus (both exedens and erythematosus), and others that will occur to you from the accounts given in the medical journals.

"7. *To Produce Electrolysis.* By means of needles introduced into the skin and the passage of a suitable galvanic current, decomposition of fluids and solids occurs, and as a result there may be absorption of new growth. This is utilized in treating keloid or hypertrophied tissue of the nose or throat, and in the destruction of pigmented moles, and the removal of superfluous hair. It also has an application in the treatment of stricture of the urethra by Neumann's method.

"8. *To Produce Intense Light.* The method, introduced by Finsen, which has been modified by the use of an electric source of illumination, has yielded really remarkable results from its action on lupus and on some superficial malignant growths. The electric light bath has been vaunted as a great restorative agent, but its utility is doubtful. In its operation the entire body is exposed to several hundred incandescent lights. In studying its effects it is difficult to separate the effects of the heat of the bulbs (which act like a Turkish bath) from the effects of the light itself. We know that light is very irritating to the nervous system, and that the intense sunlight of tropical regions makes these unfit for a permanent residence for white races of men, as shown by Major Charles E. Woodruff of the United States army in his recent work on the "Effects of Tropical Light on White Men." At all events the electric light bath does not act like the electric bath, but simply as a light and heat bath.

"9. *To Produce a High Degree of Heat.* I need not stop to speak of the uses of the galvano-cautery in surgery. It is a complete substitute for the actual cautery, and is superior to it when used as the caustic loop in removing vascular growths on the tonsils, especially in cases of hemophilia.

"10. *To Produce Magnetic Effects.* The electric magnetic coil is used to extract iron fragments from the eye in surgery. It is also utilized in the electric balance for detecting the location of a foreign body such as a bullet embedded in the tissues.

"The use of the *x*-ray in photography and in diagnosis, as in the skiascope, does not properly come within the province of the therapeutic applications of electricity. Electricity, in most cases, is to be regarded as only an adjuvant to other treatment. While giving the special electric application we should also give appropriate remedies to act on the glands of excretion and secretion. We should consider the state of the blood and give hematinics to increase the blood corpuscles and hemoglobin, or give antidotes to certain toxins, or eliminants to carry off gouty, rheumatic, or other pathogenic agents, in addition to our prescription of electricity. Massage, exercise in the fresh air, a proper diet, regulation of habits of the individual, all these are accessory agents and should be conjoined with the electrical treatment if we wish to obtain the best results."

In Rodent Cancer. The treatment of rodent cancer by zinc ions is discussed by H. Lewis Jones,[1] the lecture having been delivered in the Medical Graduates' College and Polyclinic in London. [Dr. Jones uses the term "rodent ulcer" for this condition, a common practice in England, though clearly a misnomer, considering that the disease is slowly malignant and not an ulcer in its first stages. We here give an abstract of the paper.—Ed.]:

Of late years the treatment of rodent ulcer has been robbed of many of its difficulties by the discovery of the *x*-ray and radium, both of which give good results when applied to this condition, but having certain drawbacks, as the extreme high cost of radium and the elaborate apparatus and the attendant risk in unskilled hands, in the use of the *x*-ray. He states that the method by zinc ions can be carried out by the ordinary portable battery with results which are quick and good.

The process is based on the principle of the introduction of zinc ions into the tissues of the ulcer by means of the continuous current, which seems to exercise a profound influence on rodent ulcer, causing it to assume the appearance of an ordinary simple sore, and healing it up in about a fortnight after the application. He presents cases in which the cancers had been increasing in size slowly for several years. He made an application using a solution of zinc sulphate for a period of twelve minutes. At the expiration of three weeks the ulcer was found to be completely healed and has remained so for more than six months. This case represents the ordinary behavior of rodent ulcer after treatment by the introduction of zinc. The writer's experience has been largely with the treatment of small rodent ulcers of less than one inch in diameter. He gives credit for the origin of the method to Dr. S. Leduc, Professor of Physics at the Medical School at Nantes, who in 1903 published a note on the "Cicatrization of a Rodent Ulcer of Five Years." After a single application of electrolysis with a 1 per cent. solution of zinc chlorid on a pad of absorbent wool, using a zinc rod and the positive pole, thereby driving the zinc ions into the tissues of the ulcer, after a fortnight the ulcer had healed except a minute spot at one corner, to

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(1) British Med. Jour., Feb. 16, 1907.

which he made another application, when it was completely cured.

Dr. Jones then adopted that plan of treatment with the same success and two years later reported before the Hunterian Society several cases cured by the same method. He has now operated on nineteen patients, and with the exception of five the results have been successful.

The term "zinc ions" signifies a condition of the atoms of the zinc when one of its salts is dissolved in a solvent like distilled water, and exists in a partially dissociated form, the salt being split up into atoms of zinc carrying the positive charge of electricity, zinc ions and an equal number of molecules of SO_4, or sulphuric ions having the negative charge. When the conduction of electricity takes place in such a solution or in the tissues of the body it takes place only by the conduction of the electric charges by a movement or migration of ions. In the case of zinc sulphate the zinc ions with their positive charges move toward the negative pole and conversely the negatively charged sulphuric ions move toward the positive pole, so that the electrolysis of the solution of zinc sulphate tends to the concentration of sulphuric acid at the positive pole and the zinc at the negative. This movement of the ions is made use of to introduce them into the body, and if at the positive pole there is lint or cotton wool soaked with the solution of the zinc salt and the negative pole is placed on some other convenient part of the body, the zinc will begin to move inwards on its way towards the negative pole.

The writer has been working at the treatment of lupus for nearly two years, but hitherto regrets to say without any great success. "One would expect that lupus might be readily amenable to some form of electrolytic treatment, but the tubercle bacillus contains from 40 to 50 per cent. of fat, and is probably rendered a non-conductor of electricity thereby; possibly the want of success in my attempt in lupus may be due to this fact. Still, by using such compounds as anilin and its derivatives it may be hoped that better results may be achieved, and I have already succeeded in arresting the disease in a few slight instances by introducing anilin ions from a solution of the hydrochlorate, though I have failed in many others. Nevertheless, I still consider that the electrolytic method of treating lupus is one which deserves careful study from anyone who is willing to devote much time and patience to the task."

In Neuralgia. Juettner, in his modern Physio-Therapy, says: "Pressure, compression, bandage, massage and vibration; dry heat; rest; limb in elevated position; galvanism as before; static spray (positive) locally; local sun baths. The local treatment of any neuralgia must always be secondary to the general treatment of the system. Local treatment is desirable, general treatment is necessary. Even in old, obdurate cases good results can be achieved if the physician will persist in handling his patient generally and locally according to the directions and suggestions given above.

"Faradic.—The apparent anodyne action of the faradic current in neuralgic cases (*i. e.*, sciatica) is due to its alterant action on the muscular tissue and through the latter on the circulation. The blood supply is regenerated and the cry of the nerve for healthy blood is stilled. The use of violent faradic shocks is never indicated except in paralytic conditions, when it is a question of making an impression on the tissue that has hardly any vitality left in it. Painful applications of the faradic current are never proper."

Francesco Blasi,[1] after having tried the continuous current of ordinary intensity in trigeminal neuralgia, and found it successful in obtaining a cure only in the slighter cases, began the use of a current of high intensity, used with great care to prevent any shock due to interruption of the current. He obtained the best of results in the exceedingly severe cases that are not relieved by any other form of treatment and that render the life of the patient unbearable. The apparatus in use must be capable of giving a current of very high intensity but of the greatest smoothness. The ordinary machines are useless for this form of treatment. The current must be increased very smoothly and gradually and reduced in the same way. The positive pole is placed over the painful point or over the entire surface supplied by the trigeminus, and

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(1) Ann. di Elettric. Med. Terap. Fisca, December, 1906.

should be a large flat plaque. Several thicknesses of gauze must be placed over the skin so as to prevent electrolytic effects on the skin. The sittings should be from twenty to thirty minutes long when the current is very intense, or of one hour if of less intensity. It has a calming, paralyzing action on the nerves. In the neighborhood of the electrode there develop by secondary action acids which act on the ultimate ramifications of the sensitive nerves, diminishing irritability.

Webb (*Lancet*) says the results obtained in the treatment of a number of cases of sciatica with static electricity led him to take the stand that all forms of neuritis or neuralgia, provided they are not due to pressure of tumors or other irremovable causes, are satisfactorily treated by this method.

In Nevi. Zimmern,[1] in speaking of the treatment of angiomata and nevi, says that electrolysis by the method of electropuncture is sometimes used. In nevi with visible telangiectasis this treatment at the end of a period sometimes long, sometimes short, produces very satisfactory esthetic results, according to Brocq. Negative monopolar electrolysis is used. Recently Bergonie has proposed to treat smooth vascular nevi by high-frequency currents. Brocq considers that in the case of prominent vascular tumors, that is, erectile tumors, electrolysis constitutes a wonderful treatment. Electrolysis in the treatment of angiomata is a definite operation, sure and applicable to all varieties of cavernous angiomata, small, grave, circumscribed, diffuse, or those invading neighboring tissues. The writer then describes with illustrations the technic of the treatment for these lesions.

In Glycosuria. Widal and Challamel,[2] from a methodical study of two cases of glycosuria subjected to electrical treatment, concluded that the claims of those who advocate the therapeutic application of high frequency currents in this condition cannot be maintained. They could detect no modification of the glycosuria nor of the exchanges of chlorids and nitrogen following this treatment. The conditions of the experiment were such that the slightest

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(1) Jour. de Med. de Paris, Dec. 27, 1906.
(2) La Tribune méd., Aug. 18, 1906.

action on the glycosuria by the electric current would have been easily detected had any such action really existed.

In Warts. Lewis Jones and J. M. Flavelle[1] have recently published reports of three cases of warts treated by electrolysis and the magnesium ion. A compress moistened with magnesium sulphate solution (3 per cent.) is placed on the electrode (made of metallic magnesium), or laid on the warts. If the latter are very numerous in the fingers, the entire hand may be immersed in the solution in a basin. The positive pole is used with a constant current (5 to 8 milliamperes). The séances last fifteen minutes. At least two are necessary, separated by an interval of eight or ten days. The treatment has the advantage of being painless, clean, and rapid.

Ethyl Bromid. A. Roth,[2] of Esertal, Bohemia, in commenting on an extensive experience with the use of ethyl bromid as an *anesthetic,* says that in the past twelve years he has had opportunities to use it in 1,500 cases, most of which had to do with tooth extraction or minor surgical operations, made under the many disadvantages of a country practice and without any technical assistance. The preparation is a very volatile, clear, colorless liquid, with a chloroform-like odor. He employs the Gilles double mask, with Merck's ethyl bromid, the patient either lying or sitting up. As a rule, 75 min. is sufficient to cause anesthesia. Only in a very few excitable patients, or in drinkers, has any stage of excitement been observed, and narcosis is usually obtained in from three to five minutes. During the narcosis the patients usually dream very actively, but the dreams are of a pleasant character. As a rule the narcosis persists about five minutes with the dose cited, and the patients awake suddenly, or may be aroused by sprinkling cold water upon the face. In only two of his 1,500 cases was the narcosis at all protracted. During narcosis the muscles become relaxed, although in some cases there is a distinct muscle tonus observed. In general the reflexes are normal, but a slight increase of the pulse and respiration takes place. Children need less of the anesthetic than adults. Roth has

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(1) La Clinique, May 3.
(2) Prager med. Woch., 1906, No. 21.

never observed any blood changes, such as are manifested by bloody diarrhea or blood in the urine.

Ethyl Chlorid. Hoton[1] describes a new method of administering ethyl chlorid for the production of *general anesthesia* without the aid of a mask or other apparatus. In 1894 Carlson, of Gothenburg, wishing to produce local analgesia in order to extract a tooth, used the ethyl chlorid spray, and found that his patient became anesthetized, thus accidentally discovering the narcotic properties of the drug. The same result has since been reported by others. Acting on this experience, Hoton found that by directing the spray into the patient's mouth, while nasal breathing was suppressed by compressing the nares between his finger and thumb, he obtained complete general anesthesia, with a minimum expenditure of the ether. The patient may be sitting up or lying down, he may be fasting or not. Artificial dentures are removed from the mouth, and the clothing loosened so as not to interfere with respiration. The patient is told to breathe through his mouth, while his nose is closed by pressure for a few minutes before administering the anesthetic. Into the partly opened mouth the operator projects a jet of ethyl chlorid, so that it is directed towards the base of the tongue. If a frost bite of the lips is feared, the end of the tube may be introduced as far as the line of the teeth if the patient is docile. If he is refractory and closes his mouth, then it is directed through any vacancy caused by loss of teeth, or even between the cheek and the gums. At the end of ten or thirty seconds narcosis is produced. The spray is at once discontinued and the operation performed. If the patient revives before the operation is concluded, the spraying of the mouth may be repeated. The author considers this plan much more convenient than with the ordinary methods with the use of chloroform. He asserts that it is almost entirely without danger. Recovery is rapid and is rarely accompanied by vomiting. Some patients, however, seem to have some hysterical or nervous excitement for a time. Ordinarily, after five minutes the patient can get up and go about his business. It is important that the tubes shall

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(1) Rev. prat. obstet. et de gynecol., January, 1907.

contain pure ethyl chlorid when used for this purpose. Failures have resulted from an inferior product.

As a Preliminary Anesthetic. Daniel[1] details his experience with ethyl chlorid as a preliminary anesthetic to ether. He considers accidents to be due to inexperience or faulty administration and insists that ethyl chlorid requires as much skill in its use as chloroform. With 2,000 personal administrations to his credit, he refuses to draw conclusions as to its comparative safety from his statistical results. He switches to ether as soon as the primary anesthetic effects of the ethyl chlorid are present, rarely employing more than 2.5 c.c. of the latter.

Eosin. Noguchi[2] briefly refers to the previous work by Flexner and himself on the influence of certain photodynamic anilins on *experimental tetanus* and reports further experiments by himself on the nature of the antitetanic action of eosin. His conclusions follow: Eosin prevents germination of tetanus spores, when its concentration (in glucose bouillon) reaches 0.2 per cent. When the concentration of eosin decreases to 0.01 per cent. germination of the spores is no longer inhibited. When the eosin concentration decreases to 0.001 per cent. vegetation and multiplication of the bacilli become more active but new spores are not formed, even after long intervals of time. In concentrations of 0.003 per cent. eosin prevents perfect segmentation, so that long and convoluted threads are produced. The spores which are formed in a medium containing 0.01 per cent. of eosin are often situated at the center and not at one pole of the bacilli. Eosin in 2 per cent. solution destroys vegetative bacilli in 15 minutes and in 0.1 per cent. solution, in 24 hours. Exposure to sunlight greatly hastens the bactericidal effect in the latter dilution. Eosin in high concentration is not capable of killing tetanus spores, even after long exposure to sunlight (30 hours). The toxin production of tetanus bacilli grown in eosinized culture media diminishes as the concentration of the eosin increases. The toxin-producing power and the virulence of tetanus bacilli are not permanently modified by contact with eosin for a long period or by successive cultivation

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(1) British Med. Jour.
(2) Jour. of Exp. Med., May 25, 1907.

in eosinized media. Eosin is likewise capable of restraining the vegetation of tetanus spores in the normal body. In spore threads inserted beneath the skin of rats, and surrounded with eosin in solution, a very restricted vegetation takes place. If the injections of eosin are repeated, vegetation soon ceases and the bacilli degenerate and disappear. Tetanus spores remain latent indefinitely in the healed wound beneath the skin. These spores do not lose their power to grow outside or inside the body under favorable conditions or their power to produce toxin.

Noguchi then considers local immunity to tetanus in inoculated rats treated with eosin. He believes that the restricted germination and vegetation which take place in eosin-treated animals produce a small quantity of tetanus toxin, which, acting locally on the tissues, gives rise in them to a degree of immunity. Specific experiments prove the presence of a degree of general immunity in such animals, which in almost all cases is lower than the local immunity. The facts that spore threads in these animals inoculated into the superficial fascia and that the resulting scar tissue was limited to this stratum, led Noguchi to conclude that connective tissue cells and possibly the endothelium of the lymphatics are the cells which yield the antitoxin. Diffusion of the antitoxin from this local area of high concentration into the area of low concentration, *i. e.*, the general body fluids, accounts for general immunity produced.

Ergot. C. Rivierre[1] presents conclusions regarding the efficacy of ergot and arsenic in *chorea,* formulated after a protracted clinical study of these drugs. The fluid extract of ergot was given thrice daily in doses of 1 to 1½ drams, combined with two minims of liquor strychnin. Results showed that about one-half of the cases were rapidly improved or cured by this means; most of those who did not respond to this treatment improved when arsenic was substituted. An effort was made to separate by clinical features the type of cases responding respectively to ergot and arsenic treatment, but unsuccessfully. Any division of choreics must be more or less arbitrary. Thus,

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(1) British Med. Jour., Feb. 18, 1905.

cases may be divided into rheumatic and non-rheumatic; into those with much and those with little voluntary control; into those with pronounced and those with slight movement; into first attacks and later attacks. To none of these divisions was it found that ergot-cured patients necessarily belonged; examples were observed in all classes.

In some cases in which ergot was at first ineffectual, arsenic on being given aggravated the condition, but on returning to the ergot the patients were immediately improved or cured. This suggested the advisability of using the drugs in combination. A mixture containing one dram of extract of ergot and three minims of liquor arsenicalis was thereupon administered, these doses being guardedly increased. This mixed treatment gave very satisfactory results. Its good effects embrace three kinds of cases: Those that are benefited by ergot, those that are susceptible to arsenic, those, perhaps few in number, where one drug seems to supplement the other.

Ergotin. To reduce the distressing *distention of the abdomen*[1] following intraperitoneal operations the hypodermic use of ergotin is advisable. If ergot is given by the mouth it will almost invariably excite vomiting, which will increase the distention. So two drams of the fluid extract may be given by rectum and repeated in two hours; or one-tenth grain of ergotin may be injected into the buttock or thigh—not the arm, as abscesses sometimes follow its use.

Euphorbium Resin. The euphorbium resinifera of Morocco contains 18 per cent. of gum and 38 per cent. of resin. The milk juice exudes and coagulates on the spines or modified stipules of this leafless plant, and this exudation when collected is commercially known as euphorbium. Two resins are recognized, one amorphous, bitter and acrid, with a formula apparently of $C_{10}H_{16}O_2$; the other less acrid, with a formula of $C_{13}H_{22}O$. The juice is extremely irritating to the skin and mucous membranes and may cause vesication. L. Peniere[2] has used this agent hypodermically and in a note to the Acadamie des Sciences declares that it exercises a remarkable action on the

(1) Amer. Jour. of Clin. Med., May, 1907.
(2) Les Nouveaux remedes, March 24, 1907.

nutrition of the tissues. He administers it in a fine emulsion in almost infinitesimal doses. He finds that it reduces congestion and determines an ischemia of the red globules, while, on the contrary, it increases the circulation of the white cells, precipitates them and brings about high tension of the lymphatic vessels all the way to the ganglia. Applying this observation to practice, Peniere has found that, for example, in the treatment of *uterine fibroids* the injection of euphorbium into the uterine neck causes a prompt cessation in the loss of blood at the same time that a change takes place in the interior of the fibroid tumor. He was struck with the arrest of development from this treatment; not only did the tumor cease to grow but it also entered in regression and tended to disappear. The use of euphorbium tends to make operative interference superfluous in uterine fibroma, according to the reporter's observation.

Formic Acid. The signal success which has marked the introduction and employment of *diphtheria* antitoxin has led to a feeling of such general satisfaction that very little effort has been made in recent years to improve or add to present methods of treatment. It must be admitted that the mortality has been reduced within a comparatively short period to a remarkable extent; and yet the disease works much havoc, for if not immediately fatal the after effects in many instances are such as to cause much alarm. Toxemia is the word which will best define the cause of these sequelæ as well as that of death itself, and it is in the treatment of this condition that enlightenment is very greatly desired. It would appear that a sufficiently powerful dose of antitoxin administered at an early stage of the infection, so that the toxins could be antidoted before the tissues would be devitalized or degenerated, would comprise the proper conception of perfect treatment. Such is probably the case, but so varied is the individual resistance that we have no means of knowing what the exact antitoxic gauge may be in any given case.

The three main complications which are met with in the course of the disease are cardiac failure, paralysis and renal envolvement, of which the more important are paralysis and cardiac failure. Apart from the local treatment and the administration of antitoxin the method hitherto employed has been one of stimulation, mainly by strychnin, strophanthus and digitalis. The main action of these is to raise the blood pressure by increasing the cardiac force, contracting the arteries and in a lesser degree stimulating the vasomotor centers in the medulla and cord. It has been shown that these drugs are not ideal, for they increase the amount of work required of a heart which already manifests a tendency to degeneration. As a substitute for these measures Croom[1] calls attention to the value of formic acid and the formates, the stimulating properties of which are not attained at the expense of blood pressure.

Their action is muscular, while their effect is much more lasting. Clement and Huchard have already shown that formic acid is a powerful stimulant of striped muscle and also improves the appetite and general nutrition. In concentrated form the drug produces a rise in blood pressure, but in the form of a 25 per cent. solution the increase is so slight as to be of comparatively no importance, even in advanced arteriosclerosis. The formates also possess a diuretic action, and in sclerosis of the kidney have been found to exert a marked influence in diminishing albuminuria.

From this experimental evidence it would appear that formic acid and its salts might be of considerable value in diphtheria, and the statistics of 100 cases presented by Croom seem to bear out this fact. All the patients received the 25 per cent. formic acid solution in 5 to 20 minim doses for ten to fourteen days after admission to the hospital (the Edinburgh Fever Hospital). Otherwise the treatment was the usual one for diphtheria, including the use of antitoxin. This series of cases was compared with an equal number which were treated in previous years without formic acid. The death rate from cardiac failure was apparently reduced from 8.6 per cent. to 2 per cent., and some of these cases had shown evidence of such cardiac involvement as to warrant a very bad prognosis. In the two patients who died the toxemia was profound before the first administration of the drug. The

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(1) Edinburgh Med. Jour., October, 1906.

main features in all the cases were the marked regularity of the pulse, even after a previous irregularity had been present, and a noticeable improvement in the general nutrition, which points to a successful combating of the toxemia. The number of instances in which paralysis occurred was very small, only 3 per cent., so that, considered with the other favorable factors, we seem to be quite safe in concluding that in formic acid we have a remedy which is worthy of more extended trial.[1]

Gentiopicrin. G. Tanret[2] points out the fact that gentiopicrin possesses marked purgative effects. Its action upon the hematozoa of *malaria* is explained by its bactericidal power. Before the general use of cinchona, gentian was largely employed as a febrifuge, and it is still used for this purpose in Corsica, where it is indigenous. Although less efficient as an antiperiodic than quinin, it still is sufficiently active to serve as a good substitute when the latter cannot be used.

Glycosal. Glycosal, a combination of glycerin with salicylic acid, promises to be a very valuable substitute for the salicylates in *rheumatism,* according to C. Schober.[3] The drug was employed in acute cases with fever, in subacute and more chronic cases without fever, and in exudative pleurisy, and in all instances the full effect of the salicylic acid was obtained without any of its bad after-effects. It should be emphasized particularly that the perspiration is not excessive and that the recurrences were not at all frequent. The only disadvantage noted was the somewhat disagreeable taste, which can, however, be masked by giving the drug in wafers. The heart was not affected in a single case treated. Glycosal may also be employed externally in the form of a 10 per cent. solution or an ointment. A distinct reaction for salicylic acid will be obtained in the urine after such applications, showing that absorption is very active.

Guaiacol. The local application of a 10 per cent. ointment of guaiacol and salicylic acid is an excellent remedy for *exudative pleuritis* and rheumatic joint affections, ac-

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(1) Editorial Med. Record, Feb. 2, 1907.
(2) Jour. de Medecine, Jan. 6, 1907.
(3) Inaug. dissertation at Freidrichs University, Halle, Dec. 15, 1904.

cording to D. Hecht.[1] Fluid which has persisted for weeks despite internal remedies is quickly absorbed and the pain of rheumatism is soon alleviated. Though pure guaiacol applied endermatically may give rise to symptoms of intoxication, these are never observed in a dilution of 10 per cent. The only disadvantage is that the skin becomes like parchment after several applications and absorption is no longer so active, hence is is advisable to select a different portion of the body every time.

In Typhoid. H. W. Bryant[2] recommends guaiacol highly in the treatment of typhoid fever. He has treated at least 200 cases with guaiacol inunctions with only one death. The temperature is readily controlled by guaiacol in most cases, the patient's general condition improves rapidly; the skin is kept moist, and there is very rarely any severe diarrhea under the guaiacol treatment.

Hydrastis Canadensis. Marini,[3] of Alep, considers hydrastis canadensis the specific remedy in bad cases of *hemorrhoids.* He has not had a single failure in eight years' experience. During treatment the patient must absolutely abstain from alcohol in every form. He uses the fluid extract in two teaspoonful doses daily. Dr. Marini quotes no fewer than 160 observations in support of his thesis.

Hydrochloric Acid. A. Müller's[4] conclusions from his research are to the effect that the best conditions for *digestion of albumin* occur when the albumin is dissolved in a low concentration and the total bound acidity is low. Increasing amounts of free hydrochloric acid then promote the pepsin digestion to a certain favorable point, which remains constant. In case of high total acidity, the same amounts of free hydrochloric acid have no influence on the pepsin digestion, he states, or may possibly hinder it. From this point of view gastric digestion may be divided into two types: The first characterized by more solid consistency of the stomach content, high total acidity, lack of free acid (dogs, cats); the second by more fluid stomach contents, low tonal acidity, and an

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(1) Münch. med. Woch., Feb. 28, 1905.
(2) Australasian Med. Gaz., Dec. 20, 1906.
(3) Paris Med. Jour., March, 1907.
(4) Deutsch. Archiv. klin. Med., lxxxviii, No. 5.

excess of free hydrochloric acid (man, pigs). The facts cited explain, he believes, the numerous contradictory findings in the literature and the behavior of the free hydrochloric acid in the various animal species.

Hydrotherapy. J. J. Levy[1] gives some good hints as to the treatment of *chronic rheumatism,* a disease which is often unsatisfactory as to therapeutic results. The patient is given a hot air bath or an electric light bath of a temperature of 150° F. for twenty minutes to induce profuse perspiration. Hot air or the electric bath is superior to the Turkish bath, because in the former the patient's head is outside of the cabinet, breathing pure, cool air, and besides the patient does not breath air contaminated with emanations from a number of persons who happen to be in the same hot air room, as occurs in Turkish bath establishments. After the hot air bath the patient is given a circular douche, temperature 90° F., of one minute duration. This is followed by the Scotch douche to the joints or muscles affected. As the Scotch douche is so little known in this country, and as its therapeutic effects are so striking in these rheumatic conditions, this douche is described in some detail.

It is a douche where high and low temperatures of water are applied alternately. It can be called the douche of thermic contrasts. The author's douche apparatus has three tubes placed side by side, one for live steam, one for cold water, and the third gives any desired temperature, as the thermometer is in contact with the mixing chamber. Steam and cold water are usually employed by Levy for the Scotch douche, and by means of the rapid alternation in the application of live steam and cold water to the affected parts, a most profound local effect is produced and a marked hydrotherapeutic reaction is brought about. The value of this douche consists in the combination of thermic and mechanical stimulation; the mechanical effect is produced, because the water comes out of the tubes under pressure, which can be increased as desired, while the marked thermic stimulation is due to the tremendous difference in the temperature of cold water and steam. The increase of vital activity brought about by the reaction following the Scotch douche becomes of great value in restoring the

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(1) N. Y. Med. Jour., October 13, 1906 .

functions of diseased parts. On account of the improved circulation, absorption of the deposits in the joints is brought about. After the Scotch douche, massage, with special attention given to the affected joints or muscles, is very useful in these cases. Often the combination of a douche with massage, called douche-massage, acts very beneficially. Prolonged hot tub baths (100° F.) with massage during the bath, followed by warm blanket pack, are useful procedures for robust rheumatic patients.

Hot fomentations, as recommended by Baruch, are especially indicated in cases of chronic muscular rheumatism. If the compresses are thoroughly wrung out, and if the affected region is greased with petrolatum, then there is no danger of burning the patient. After the termination of the fomentation the patient is washed off with water at 70° F. with friction and dried. The best time for the application of these compresses is just before the patient retires. These patients should be advised to drink plenty of water—from 6 to 8 glasses a day.

In Pneumonia. Worster[1] gives the detailed treatment of pneumonia in children with cold baths, illustrating the same with the records of a case. The good effect of this treatment he explains by the cold applied to the peripheral nerve producing a shock, which is conveyed to the central nervous system. This in turn sends out reflex stimulus to the nerve centers, which govern respiration, circulation, digestion, tissue building and excretion. The temperature, however, is reduced, respiration deepened, cardiac action improved, and the pulse slowed and rendered less dicrotic.

His method is as follows: In the early stages of pneumonia full baths, beginning when a temperature of 102.5 F. is reached, are given every four hours. The temperature of the first bath is 95 F. This is lowered two degrees for each bath until it reaches 80 F. The temperature of the bath should not be reduced below 80 F., and the effects should be closely watched. During the bath vigorous friction of the body should be applied. If dyspnea, somnolence, stupor and delirium occur the child is held in water at 100 F., enough to cover its hips for five minutes; then several basins of water at 70 F., having been prepared in a readiness, are poured on its shoulders. This

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(1) Med. Record, Feb. 16, 1907.

can be repeated every two hours, if necessary. This procedure is called "affusion," and should be used when any head symptoms make their appearance. Each bath generally reduces the temperature two degrees and, though it rises again, it is generally not so high. The baths are repeated until the temperature is finally reduced to normal and remains there. His report on this method of treatment is very favorable.

In Typhoid. S. Baruch[1] declares that in the management of a case of typhoid fever the chief aim of the physician should be the enhancement of the patient's resisting capacity to the toxemia, which threatens his life. The damage sustained by the nerve centers is the measure by which the mildness or severity of a case of typhoid fever is gauged. Cold baths must not be regarded as cooling procedures. Cold baths prevent lethal complications by reason of their sustaining effects on the central nervous and circulatory systems. The form of the bath and its temperature must be adapted to the condition of the patient.

In Hemorrhoids. Halbhuber[2] recommends a very simple treatment for inflamed hemorrhoids—namely, repeated applications of cold tap water, conducted, if necessary, through a flexible tube directly on to the parts, for three minutes at a time, at intervals of fifteen minutes. This procedure, carried out night and morning for several days, has given very satisfactory results, even in cases previously recommended for surgical interference.

In Sunstroke. In the *Journal of the Royal Army Medical Corps* for December, Capt. M. F. Foulds,[3] R. A. M. C., has called attention to a little known treatment for sunstroke suggested to him by Capt. W. A. Heppolette, Indian Subordinate Medical Department—namely, iced-water enemata. In Jhansi, India, in 1903, he saw his first cases of sunstroke, which were all of the same type. The thermometer ranged from 105° F. to 115° F. in the shade. Nine men were taken into the hospital, unconscious, and with deep and stertorous breathing, dry, burning skin, rapid pulse, and a temperature of from 107° F. to 110° F. They were stripped and put to bed in the shade. One attend-

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(1) Med. Record, Oct. 13, 1906.
(2) La Clinique, July 13, 1906.
(3) Lancet, Dec. 22, 1906.

ant poured water over them, as cold as could be obtained, and two others rubbed the body with ice. An enema of about a quart of iced water was given every ten minutes until the axillary temperature fell to 102° F. The back of the neck was blistered. All the patients recovered, and Captain Foulds thinks that they owed their lives to the use of the enemata. Six other men were taken into the hospital, drowsy and complaining of pains in the head and dizziness, and with temperatures varying from 103° F. to 105° F.—*i. e.,* with all the prodromata of sunstroke. They were treated with iced-water enemata and left the hospital quite well on the following morning.

Captain Foulds advocates this treatment of sunstroke on the grounds that when a person is hot and wants to cool himself he takes an iced drink. The patient suffering from sunstroke is generally unconscious, or nearly so, and it is much easier and safer to administer iced enemata than to wash out the stomach with iced water. Professor Osler advises packing the patient in a bath of ice, and says that iced-water enemata may also be administered. Sir Patrick Manson advocates only external application of cold. Captain Foulds points out that in India ice is not issued in such quantity as to enable every patient suffering from sunstroke to be packed with ice, and that it takes very little ice to cool a quart enema.

The statistics of sunstroke in India show a high mortality. In 1900, 174 patients suffering from sunstroke were admitted into the hospital, of whom 40 died; in 1901, 157 were admitted and 37 died, and in 1903, 307 were admitted and 54 died. When these results are compared with those of Captain Foulds, his claim, that if the treatment advocated by him were better known the mortality of sunstroke would be diminished, seems to be reasonable. He also makes the suggestion that the treatment might prove useful in hyperpyrexia such as occurs in rheumatic and scarlet fever and tetanus.

Hydrogen Dioxid. Lavage, with weak solutions of hydrogen dioxid (3 to 4 volumes), used three or four times a day, have long been employed in the treatment of *purulent ophthalmia.* A. Jacqueau,[1] of Lyon, also treats all

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(1) La Semaine méd., and Bull. Général de therap., April 8, 1907.

corneal affections systematically with instillations of the half strength (6 volumes) solution, and has obtained good results. He found that hydrogen dioxid is remarkably efficacious in conditions of grave keratitis. For instance, in two cases of traumatic ulcer of the cornea, complicated with hypopyon, a cure was obtained in less than a month. It is to be noted in this case, however, that the pus in the anterior chamber was evacuated by the Samisch incision, and that the actual cautery had several times reached the cornea. On the other hand, in another case similarly affected with ulcer of the cornea and hypopyon filling half of the anterior chamber, after the exclusive use for three days of the dilute solution of hydrogen dioxid, the pains ceased, the pus had almost completely disappeared, and twenty-five days after the commencement of treatment the patient was discharged and returned to his work. This method is still useful after the ulcer has perforated the cornea. In a patient suffering with an extensive and deep traumatic ulcer, with hypopyon, perforation occurred at the time of making the instillation, and bubbles of oxygen appeared in the anterior chamber, thus demonstrating the entrance of the solution into the chambers, but in spite of the incident cicatrization rapidly took place.

In Affections of Mucous Membranes. Hydrogen dioxid ($H_2 O_2$) forms an excellent disinfectant for the mouth and throat. Many cases of catarrhal and ulcerous stomatitis yield to the employment of $H_2 O_2$ alone, and on account of its non-toxicity it is preferable to any other remedy. On account of this property of non-toxicity it may be used in the youngest children, for if swallowed it can do no harm. The same is true of aphthous and mercurial stomatitis. In simple, follicular and lacunar tonsillitis, and in tonsillitus accompanying the infectious diseases, gargling with peroxid is more affective than with any other remedy. In diphtheria its value is well known. In laryngeal tuberculosis it is more effective than lactic acid. The inhalation of the steam from boiling peroxid is useful in laryngeal tuberculosis, as also in putrid bronchitis. Under its influence—painted on or used in the form of a spray—the odor disappears rapidly in non-syphilitic ozena.

Other conditions in which peroxid has shown itself undeniably useful are: Gastric catarrh, dyspepsia, diarrhea, vomiting of pregnancy; in poisoning with phosphorus, hydrocyanic acid, coal gas, sewer gas, etc.; furunculosis; in surgery as a general disinfectant; in the treatment of fistulas, purulent arthritis, in ulcers of the leg, abscesses, frost bites, etc. It is an excellent hemostatic in hemorrhages from the nose and gums, is very useful in obstetric work, in gonorrheal and membranous endometritis, in removing cerumen from the ear, in the treatment of purulent otitis media, in squamous and ulcerous blepharitis, in conjunctivitis, corneal ulcers, ulcus serpens, herpes tonsurans, lupus, pigmented nevi, syphilitic ulcerations of the tongue, mouth and throat, in chancroids and phagedenic chancres. It also renders invaluable service in dentistry.

In Appendicitis. In the case of a boy 3½ years old, suffering from appendicitis with general peritonitis, it became necessary after removing the gangrenous appendix to leave a fistula of the small intestine, owing to the presence of intestinal obstruction. After this the upper portion of the intestine performed its function perfectly, whereas the lower section remained absolutely inactive in spite of irrigations, etc. Thereupon W. von Muralt injected 20 c.c. of a 2 per cent. solution of H_2O_2 into the rectum, and a prompt evacuation followed. The same procedure was repeated with equal success on the following day. The author suggests that the oxygen liberated from H_2O_2 might have stimulated the paralyzed intestine to activity, or possibly an adhesion was stretched and the lumen of the intestine opened by the gas.

In Impetigo. Carrière[1] reports good results from the following treatment of impetigo of the scalp in children. The crusts are first to be cleaned off by means of a potato starch poultice (borated), or simply compresses of salolated gauze, moistened with decoction of walnut leaves. This is to be covered with rubber cloth, and renewed three times a day, and also just before going to bed. When the crusts are removed the microbes of impetigo are attacked by hydrogen peroxid (10 volume) applied on gauze and covered with rubber; this dressing is renewed each twenty-four hours. Under this treatment 60 per cent of the cases re-

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(1) Jour. de méd. de Paris, Jan. 13, 1907.

cover in less than five days. Recovery may be hastened by disinfection of the alimentary canal by the administration of fractional doses of calomel.

Hyoscin-Morphin-Cactin Anesthesia. H. G. Ebert,[1] assistant surgeon in the Public Health and Marine Hospital Service, reports the successful use of the hyoscin, morphin and cactin combination as a general anesthetic in an amputation of the thigh in the upper one-third. The tablets used were those put up by the Abbott Alkaloidal Company, and contained hyoscin hydrobromid, 1/100 gr.; morphin sulphate, ¼ gr.; cactin, 1/67 gr. Injections (hypodermic) were given two hours, one hour and half an hour before operation. Anesthesia was ideal and complete throughout operation and for several hours afterward. No ill effects whatever were noticed at any time. Muscular relaxation was not so complete as in ether or chloroform anesthesia, so that after the operation no subsequent contraction of flaps took place, and there was no more tension on the stitches afterward than at the time they were put in.

If this anesthetic will work in all cases as well as it did in this and numerous others reported in the medical journals, says the author, it would appear to be the ideal anesthetic for field use and emergency work, where one may be short-handed, as it does away entirely with the anesthetist and the space and care necessary in the transportation of ether or chloroform.

The absence of inconvenient after-effects is a most valuable feature of this preparation in field work, while the ability to perform serious operations promptly is of particular advantage; but of equal utility in active service is the possibility of securing complete rest and anesthesia in cases of injuries too extensive to permit of immediate operative attention, such as in visceral injuries of the abdomen, chest or head. It seems a good thing for the military surgeon, Ebert concludes, and should come into favor with him.

Essentials for Success. Lanphear,[2] writing anent his modification of the scopolamin-morphin anesthetic compound says:

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(1) The Military Surgeon, May, 1907.
(2) Critic and Guide.

"It is essential that the hyoscin be free from apoatropin and atroscin, because it has been shown that commercial 'scopolamin' (chemically identical with hyoscin) is dangerous as well as ineffective when its optical rotation is less than minus 10°; that is, it is not strongly lævorotatory when there is present much apoatropin; so a preparation from a reliable manufacturer only must be employed. The nearer the hyoscin is to 20° in its optical rotation, the better and safer the drug.

"When a reliable tablet of the advised formula is used it is of value not only as a means of producing analgesia for surgical operations but also as a substitute for the commonly used morphin-atropin combination for the relief of pain. In fact, after one has employed the newer formula for mere anodyne effect he will not return to the old-time mixture. The advantages of the anesthetic tablet over mere morphin and atropin are:

"1. It does not interfere so much with peristalsis.

"2. It does not dry the throat so badly.

"3. It does not cause so much nausea and headache.

"4. It increases the heart's action more effectually and for a longer time.

"5. It produces a degree of exhilaration most agreeable to the patient.

"6. It induces a more perfect freedom from pain, and the sleep is more nearly like that of normal slumber."

Lanphear uses the following formula, which Abbott is introducing to the profession, in whole and half-strength hypodermic tablets:

Chemically pure hyoscin hydrobromid	gr. 1-100
Chemically pure morphin hydrobromid	gr. 1-4
Cactin (from cactus grandiflorus)	gr. 1-67

Writing of the Abbott-Lanphear method of anesthesia, Webster[1] expresses himself, from limited experience, as much pleased with its effect. He thinks it will supplant older methods of hypodermic anesthesia. In a case of old laceration of the perineum, in two cases of trachelorrhaphy, and in a rectal operation involving the removal of pockets and papillæ, it worked like a charm, with no untoward symptoms.

H. O. Walker, Professor of Surgery, Detroit College of

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(1) Eclectic Med. Jour., April, 1907.

Medicine, reports ninety-two cases operated on under hyoscin-morphin-cactin anesthesia. He writes: "I have used it in extreme cases of age—that is, from 10 to 82 years—and while I had two deaths, they were not, in my opinion, due to the anesthetic.

"The following are some of the cases in which this newer anesthesia was used: Trephining of the skull, thyroidectomy, resection of ribs for empyema, intestinal resections, gastroenterostomies, appendectomies, nephrectomies, hysterectomies, herniotomics, rupture of bladder, removal of vesical calculi, resection of the head of the femur, amputation of the legs, and reductions of fractures."

In Obstetric Practice. The actual results which have been attained by Woodbridge Hall Burchmore[1] in the use of hyoscin in obstetric practice are that the drug produces sleep and labor comes on and progresses normally. Labor was not prolonged—if anything, it was shortened—and in no case was it found advisable to use an anesthetic, even though forceps were used. No results influencing the infant unfavorably were observed. The hyoscin was administered hypodermically in doses of 1/100 grain, in combination with morphin, ¼ grain, and cactin, 1/67 grain. The first dose was given as soon as the first stage of labor was certainly begun, and in most cases was sufficient to hold the patient until the expulsive pains were well pronounced. The instant the patient began to show the least evidence of perception, the second dose was given. Sleep continued from five to eight hours. From the peculiar behavior of the child in utero it is inferred that in two cases the baby also was put to sleep. No harm came from it, however, and all direct evidence of long-continued interference with the activities of the child after birth is wanting. The effect on the mother is to quiet all mental disturbance which pain and suffering is sure to produce. The mothers show no signs of exhaustion, and no spasmodic resistance, so apt to accompany pain, in any way interferes. One woman whose previous labors had been notably tedious, and she restless and hard to manage, slept through the whole series of phenomena; not until she had been removed into a clean bed and properly cared for did she awaken.

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(1) Med. Record, Jan. 12, 1907.

The patient's movements are surprising and apparently most conducive to easy parturition, because of the inhibition of active resistance. One who has seen great numbers of labors said that he never saw anything like it before, adding that the great advantage over chloroform is easily seen, in that with the hyoscin sleep, reflexes are augmented, not suppressed.

The writer sums up his observations as follows: "Hyoscin is, then, for the accoucheur, the ideal anesthetic, one which, so far as we yet know, he can use to obtain the desired effect without fear of overdose. Finally, and perhaps of all the most important, its use has stripped motherhood of its horrors."

Hypophysis Bovis. Renon and Delille[1] reported to the Societe de Therapeutique the results of the administration of powdered hypophysis of beef cattle in various clinical conditions. In *Basedow's disease* the hypophytic medication (0.1 gram, morning and evening) moderates all the symptoms, which, however, reappear if the treatment is suspended. The tachycardia gradually or slowly yields, and the goiter is slightly reduced or remains stationary. In chronic pulmonary tuberculosis, favorable results were noted, which are explained by the tuberculous lesions of the hypophysis found in these patients. In order to have decided improvement, it is necessary to give arsenic and the recalcification treatment in addition to the opotherapy. In two cases of typhoid fever the disease ran a brief course; in one of typhoid myocarditis a cure resulted. These cases are merely mentioned without deducing any conclusions. In reviewing broadly the effects of this treatment, it would appear that all the symptoms which disappea under opotherapy are those which are caused by hypophytic insufficiency. It will be useful to investigate the effects of the two parts of the gland. One part (the posterior lobe), by its marked action in the slowing of the palpitations of the heart and reducing the amplitude of its force, one part of the hypophysis may be a valuable cardiac medicament. If the asserted antitoxic effect of the gland is confirmed by further experience, then opotherapy may be useful in the treatment of infectious diseases. The clinical

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(1) Rev. de therap. medico-chirurg., Feb. 1, 1907.

effects usually observed all slowing of the pulse elevation of arterial tension, increase of appetite, and diminution of insomnia.

Ichthyol. Johann Hirschkron,[1] of Vienna, writes, from his experience of fifteen years, of the value of ichthyol in *relieving pain* and upon the widely varied usefulness of the remedy. Applied externally, it has proved an excellent treatment for all cases of rheumatism. In such cases a lukewarm 10 per cent. solution of ichthyol-glycerin is used to moisten a gauze dressing for the affected part of the body, and a hot-water bag is also applied if heat is desired. In the form of salve, ichthyol, with a small addition of menthol, acts with magical results; the foundation of the salve should be of equal parts of vaselin and wool-fat, 6 per cent., of ichthyol and 1 per cent. of menthol being added. For patients who cannot bear heat, ichthyol is applied in glycerin salve form, protected by a compress. Such an application is especially effective in cases of painful swelling, which it will often reduce over night. It is also recommended in gonorrheal rheumatism for the swellings in the large and small joints.

Added to the bath, ichthyol gives good results in the treatment of neuralgia, particularly neuralgia of the back. To a full bathtub add 2 ounces of ichythol for instant relief from pain. The value of a salt water bath is heightened by a previous use of ichthyol in the affected part.

In its original use as a remedy for every form of skin disease, the author claims that ichthyol still remains unrivaled.

Given internally, ichthyol is equally effective in allaying pain. In the form of pills, capsules or diluted with water, it affords immediate relief in chronic catarrh of the stomach, does away with the pain attending the process of digestion, and relieves the painful accumulation of gases so common in stomach and intestinal troubles. Ichthyol has also proved itself a valuable remedy in cases of asthma, tuberculosis, hemorrhage, etc.

The writer concludes: "It is well known that for several years past various substitutes for ichthyol have been placed on the market. As these are always as costly as ichthyol

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(1) Deut. Aerzte Zeitung, 1907, No. 1.

and should, therefore, be just as good, I have sometimes tried them in my practice; but I have always gone back to ichthyol again, for I do not find these other preparations so effective and reliable and, besides, they seem to vary in strength."

In Inflammation. Kegel[1] gives the therapeutic action of ichthyol as that of abstracting oxygen from the tissues, thereby producing a marked diminution of any inflammation or local congestion. It contracts and granulates wounds perfectly, and has the power of penetrating unbroken skin. Unna introduced it first as a therapeutic agent in skin disease. The author has used it with good results in chronic articular rheumatism. For this disease he applies it as a 25 per cent. ichthyol ointment and gives it internally in the form of a pill, capsule or in water from 3 to 10 m. three times a day. It has been recommended in lumbago, muscular rheumatism, rheumatic or gouty joint disease, and almost every form of subacute or chronic gout by Wood and Schweniger. Hare speaks favorably of its action on chronic articular rheumatism in the form of sodium and lithium, sulpho-ichthyolate in 10 to 30 grain doses in capsules. In erysipelas, eczema, psoriasis, acne, prurigo, herpes zoster, lupus, urticaria, burns and varicose ulcers it has been found to be of special value. (Klatz, Nussbaum, Jamieson, Allen, Elliott, Unna, etc.) Lately it has come into use as a treatment for tuberculosis. The author and others (Rosenburg, Burnet) report favorably regarding its action in this disease. Furunculosis of the external auditory canal, anal-fissure, cervical endometritis, vaginitis, chronic inflammation of the uterus and adnexa are among the conditions which call for its exhibition. The addition of a little oil of citronella to ichthyol ointment robs it of its disagreeable odor.

In Tuberculosis. John H. Williams,[2] of Asheville, N. C., considers this the most useful drug we have in tuberculosis. He gives it in capsules, commencing with about 10 minims and increasing to 20 minims and finally reaching 50 or 60 minims, three times a day. The full dose may produce slight diarrhea or slight pigmentation of the skin.

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(1) Lancet-Clinic, April, 1907.
(2) Merck's Arch., February, 1907.

Locally, in tubercular ulcers, bone caries and laryngitis he has found it superior to iodoform, balsam of Peru and other medicaments. He has found it useful in hemorrhage on account of its power to constrict the capillaries in inflamed and congested tissue. It is an excellent expectorant, the sputum becoming thinner, is more easily raised and less abundant. It improves the appetite and digestion, increasing the weight and reducing the night sweats.

Intravenous Medication. DeSpeville,[1] in a communication to the *Societe medicale de l'Elysee,* defends the intravenous method of administering remedies when rapidity of action is required. In rheumatismal iritis he mentioned the case of a patient who was cured by ten injections of sodium salicylate into the veins. In severe cases of syphilis he prefers the mercuric cyanid to the corrosive chlorid (of either the dose is generally less than .015 gram and may go to .02 gram, but not beyond). One centigram, and sometimes less than this, may excite intolerance, which is manifested five or six hours after the injection by a diarrhea. In secondary syphilis, or in cerebral syphilis, it should be used especially when ordinary measures appear to be insufficient. In syphilitic and rheumatic affections of the eye it has an important field of usefulness. The intravenous method has also been recommended for the administration of serum. The technic should be carefully carried out, and the skin over the yein selected should be sterilized and the vessel compressed to make it prominent; generally the median basilic or cephalic vein is selected.

Iodin. Winfield S. Pugh considers pure iodin a superior antiseptic. In treating *infected wounds* he applies the tincture of iodin on a piece of cotton twisted around a toothpick directly to the wound. The way this substance cleanses a wound filled with pus is somewhat surprising. The author has used iodin in numerous scalp wounds, ulcers of the legs, inguinal adenitis, vaginitis, etc., and with very good results. Of the ulcers of the leg many were exceedingly foul, being at times filled with an area of pus. The iodin acts not only as a germicide, but as a deodorant as well, and it stimulates the formation of granulations.

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(1) Jour. de med. de Paris.

In gonorrheal vaginitis iodin acts very favorably, the discharge ceasing in many cases after a few swabbings.

In the treatment of surgical tuberculosis, the author thinks iodin one of the very few remedies of value. He has seen excellent results follow its use on old tuberculous sinuses, following tuberculous glands of the neck. In tuberculous joint affections it does great good, but in tuberculous osteitis its use is not followed by such good results, except in that it moderates the discharge associated with this condition. Upon venereal sores, as chancres and chancroids, it is useful; particularly does it check the serpiginous sores; its use may also be recommended for pus in the perineum following urinary extravasation.

In Sepsis. James Hawley Burtenshaw,[1] of New York, reports on iodin in post-operative sepsis. He says that, while his own experience has been disappointing, yet he is convinced that further development of this treatment will in the near future yield brilliant results. He used iodin in his cases in different forms and in various ways, in one case injecting a solution of iodoform through a tube into an abdominal wound, introducing a suppository containing iodoform into the vagina and into the uterine cavity, and giving iodipin by the bowel—as the patient's stomach was unretentive. Of iodipin he says that he has used it in other cases as a substitute for potassium iodid with very gratifying results. It is a combination of iodin with the fatty acids of sesame oil, free from irritating properties, the iodin being set free in an alkaline medium.

In the Vomiting of Pregnancy. Arthur H. W. Ayling[2] draws attention to a very simple and, in his hands, a very efficacious remedy for the vomiting of pregnancy. For some years past he has given tincture of iodin, 1 m., in an ounce of water, to be repeated every two hours until the sickness ceases. In one or two cases no second dose was required. As a rule three or four doses suffice, and no special diet is needed.

Middle Ear Catarrh. In cases of middle ear catarrh associated with granular pharyngitis, W. L. Ballenger,[3] of

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(1) N. Y. State Jour. Med., April, 1905.
(2) British Med. Jour., Dec. 15, 1906.
(3) Jour. of the Amer. Med. Assoc.

Chicago, employs the following formulas:

℞	Tincturæ iodi	m. 48
	Glycerini	q. s. ad ℥. 1
M.	Sig.: Apply to pharynx with swab once daily.	

℞	Iodoformi	gr. 1
	Potassii iodidi	gr. 10-20
	Morphinæ sulphatis	gr. 1
	Glycerini	℥. 1
M.	Sig.: Apply to pharynx with swab once daily.	

℞	Tincturæ iodi	gr. 5-20
	Potassii iodidi	gr. 10-30
	Olei gaultheriæ	gr. 5
	Glycerini	℥. 1
M.	Sig.: Apply to pharynx with swab once daily.	

Iodipin. The number of articles lauding the properties of iodipin is gradually increasing. A. Schoenbaum,[1] of Hosefstadt, has employed the 10 per cent. preparation internally and the 25 per cent. intramuscularly in the later manifestations of syphilis, in cardiac arrhythmia, arteriosclerosis and bronchial asthma, and has never seen iodism or gastric disturbances. The effect generally shows itself in eight days and is more uniform and permanent than with the iodids.

Its Action. P. Chapuis[2] has made extensive experiments with iodipin, and finds that it is not all at once passed through the system, but is stored up in the subcutaneous tissues, to be absorbed only very gradually. The result is that the action of the drug is very much prolonged and that iodism is very infrequent.

R. Schmidt,[3] of Ziegenhain, recommends that the iodipin be warmed up to 40 C. (104 F.), and that a wide needle be employed. The needle should always be removed from the syringe before injecting to be certain that no vein has been punctured.

In Struma. Mollo[4] contributes to the subject of the treatment of struma by iodipin injections, following the suggestions laid down by Meyer in 1901. The patient, a young woman, married two years, had noticed that for about eight months she had had a slight pain in the right side of the neck. The neck began to swell, and she called in medical aid. After two months' observation thyroid tablets were prescribed, but they proved of no service.

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(1) Berl. klin. Ther. Woch., 1904, No. 47.
(2) Thesis presented at the University of Lausanne, 1904.
(3) Berl. Tierarzt. Woch., 1904, No. 52.
(4) Allg. Wiener Med. Zeitung, No. 47.

Iodipin, 2 c.c. (30 min.) of the 25 per cent. preparation, was then injected every other day. Under this treatment the goiterous swelling disappeared; after the twentieth injection it had totally disappeared. In all 50 c.c. (1⅔ oz.) of the preparation were employed.

In Syphilis. In a comprehensive article on the treatment of syphilis George Pernet,[1] of the University College Hospital, London, refers to the uses of iodized oils, mentioning specifically iodipin (iodized sesame oil) and lipiodol. They can be given by the mouth (capsules, etc.), or are preferably injected hypodermically where the tissues are lax (back, loins in posterior axillary line; the abdomen is recommended by some and not by others; the antero-external part of thigh, etc.), so as to allow of the injection of 5 or 6 c.c. (80 or 100 m.) at a time. The daily dose in injection varies from 5 to 15 c.c. (80 m. to 4 drams), according to the kind of case. Large doses have been employed in this way for many days (15, 20, 30) together without inconvenience of any sort. The parts to be injected should be left and right alternately. The Germans recommend an ordinary large asbestos piston syringe with a long needle, but as a matter of fact a platino-iridium needle of 4 cm. (1½ in.) with a good lumen suffices so long as the oil is slightly warmed. The French, too, employ a syringe with a screw (somewhat on the principle of Guyon's instillation syringe), and this answers better (Chatin's, also Barthelemy and Levy-Bing's pattern). Of course the syringe and needle and the skin must be, respectively, thoroughly and carefully sterilized and cleaned up.

The preparation is slowly absorbed into the organism and slowly eliminated, a very different state of affairs to that which obtains in the case of ordinary iodid of potassium mixtures, in which elimination is rapid. These iodized oils have proved valuable in the treatment of severe cases, especially in syphilitic conditions of the eye.

Iodofan. Eisenberg considers iodofan to be equally as efficient as iodoform, and at the same time to be free from all the bad after effects frequently produced by the latter drug.

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(1) British Med. Jour., March 30, 1907.

Iodoform. Thomas W. Dewar[1] reports the following case, which is worthy of the attention even of general practioners. The patient was a woman of 29, whose *lupus* commenced on the left cheek at the age of 15. For several years no treatment was adopted, but at the age of 21 she consulted a specialist, under whose care she was for about four years (from 1898 to 1902). He cauterized the spot and tried a number of different ointments without benefit. In July, 1904, she commenced a course of Finsen light treatment, which she continued for twelve months. The lupus on the left cheek improved somewhat, but the right ear and cheek were unaffected. On August 9, 1906, or rather more than a year later, the disease was worse than it had ever been, any benefit she had received from the Finsen treatment having entirely passed off. She was dyspeptic, looked ill and had lost about twenty pounds in weight during the preceding year. There was a ragged triangular ulcer on the left side of the nose, a chain of smaller circular ulcers with unhealthy scar-tissue intervening joined this to a fresh extending ulcer over the left malar. Numerous small pits were at the margin of the affected area, passing upwards to the lower eyelid. The lobe and helix of the right ear were ulcerated on both sides. Small ulcers extended up the cheek in front of the tragus. A large ulcer, ¾ inch by ½ inch, was situated over the angle of the jaw on the right side, and extended upwards in a deep fissure between the concha and mastoid.

The surrounding tissue was reddish-brown in color, thickened and indurated, beyond which were scattered little vesicles. On scraping off the tops of these, sharply punched little red holes were seen. The diseased areas were extending and covered with crusts. The scabs were washed off with hot water. Those which would not come off were removed with a spoon or pulled off with forceps. No violence was used. When thoroughly freed from scabs and discharge and dried, thin pieces of cotton-wool soaked in a 5 per cent. solution of cocain were applied to the ulcers for a few minutes. On removing these, thin films of cotton-wool soaked in a 10 volume solution of peroxid of hydrogen were left on, and kept in position by touching the edges

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(1) British Med. Jour., March 30, 1907.

with collodion. Every second day the patient received an intravenous injection of 15 minims of an ethereal solution of iodoform plus liquid paraffin. The treatment was begun on August 9. She was quite cured in every part by September 18—that is, in the short period of forty days. The author scorns the suggestion which some might be inclined to make that the peroxid of hydrogen was instrumental in the cure of the lupus. He cannot believe that peroxid of hydrogen would cure a case of lupus of 13 years' standing when the Finsen light and other approved methods had failed. He firmly believes that the intravenous injection of the ethereal solution of iodoform played an important part in the recovery. This, by the way, is the author's favorite method of treating tuberculosis, and he says that he long desired to test his method in a case of lupus, for he reasoned that if a solution of iodoform intravenously injected was capable of arresting pulmonary tuberculosis, it should be of value in lupus, which, as is well known, is a cutaneous form of tuberculosis

Iodogelatin. Francesco Putzu[1] published the history of a case of *actinomycosis* of the temporo-maxillary articulation and side of the jaw in a woman of twenty-eight years of age. The swelling was of woody hardness, and examination of the pus from softened areas showed the presence of actinomyces and the absence of any other pus germs. They were in abundance in all pus examined during the second year of the disease. Each granule consisted of a central mass of filaments and a peripheral mass of rays. Cultures in animals showed foci of actinomycosis. The neighboring glands showed a characteristic hyperplasia with foci of detritus similar to cheesy matter. The patient was treated with iodid of potassium internally and with injections of the iodogelatin of Sclavo. The result was a complete disappearance of the growth and of all symptoms except an ankylosis of the jaw due to a large amount of cicatricial tissue in the articulation. This was removed by operation and the patient recovered the use of the articulation.

Jequiritol. Coppez reports that his results in *trachoma* from the infusion of jequirity and from its active principle, jequiritol, have been the same, note Walter L. Pyle

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(1) Rivista Critica di Clin. Med., Dec. 1, 1906.

and Helen Murphy,[1] Philadelphia, in reviewing advances in opthalmic therapeutics. He uses Merck's outfit, containing vials of graduated strength, together with the neutralizing jequiritol serum. He applies cocain first, avoiding bichlorid of mercury washes, and begins with 10 mg. (1/6 gr.) of the No. 1 preparation, increasing daily from 10 to 50 mg. (1/6 to 5/6 gr.), and then using the No. 2 vial, increasing the dose of that also. When there is a reaction he waits until this subsides, and resumes with the dose that caused the inflammation, discontinuing applications usually after the second reaction. He has had to apply the serum only once to modify the severity of the results. He uses jequiritol mainly for the acute exacerbations of trachoma, following it by the usual surgical and other measures. In mild cases of trachoma the disease is favorably modified by weak solutions even when no reaction is reached, and it has been of undoubted advantage in persistent phlyctenular disease, chronic conjunctivitis, pseudopterygium, and after conjunctival burns.

DeWecker combats the statements made in its behalf in the award of the von Graefe medal, and states that equal doses of jequiritol do not produce the same results in all eyes, and that there are complications, which do not occur with the infusion, and which are influenced by antiabrin.

Kho-Sam. This drug seems to be attracting some attention, especially among the French in Cochin-China and Tonquin. It has been long in use in the East among Chinese and Indian physicians, but until something more definite is understood as to its mode of action we can only report the clinical cases which appear from time to time. G. H. Lemoine[2] has been successful in a case of chronic *ameboid dysentery* which did not yield to the usual treatment during four months' trial, whereas, after administration of a few doses of kho-sam, a natural movement of the bowels ensued, and this was maintained after a lapse of one month. Mongeot, of Saigon, reports the case of woman suffering from metrorrhagia together with dysentery. The metrorrhagia was checked within twenty-four hours, and the dysentery completely disappeared on the second day. He has since used kho-sam in 1,263 cases

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(1) Amer. Med., February, 1907.
(2) Société Medical des Hôpitaux, Paris.

of dysentery, of which 879 were still under observation, and 96 per cent. of the other cases were discharged cured. Barrois, of Nancy, has reported five cases of ameboid dysentery cured with the drug, and Mathieu has used it since 1901 in 1-grain doses with remarkable results. In a very severe case of ameboid dysentery with abscess of the liver, a relapse of the condition was improved by the drug within twenty-four hours, although the cure was not complete. Two other of his cases of dysentery nostras were entirely cured in two days. Doper is of the opinion that when using kho-sam it is advisable to find out whether we are dealing with a bacillary diarrhea or an ameboid dysentery, and Vincent calls attention to the fact that in the ameboid dysentery a simple change of diet is often sufficient to obtain temporary and sometimes permanent results. Lemoine, however, insists that although his patient was under strict diet and proper medication, no improvement occurred until kho-sam was given. It is important to remember that when about to give kho-sam, the seeds must first be freed from their surrounding oil by pressure between blotting paper. The plant belongs to the Brucea Sumatranna family and contains a glucosid khosamin, which in small doses is emeto-cathartic and cholagogic, slightly antiseptic, and increases the viscosity of the blood serum. The maximum dose of kho-sam is about 6 to 8 grains daily. A larger dose results in exacerbation of the dysenteric symptoms, which, however, subside rapidly.

Liquor Sodæ Chlorinatæ. A. C. Basu[1] has found this solution an excellent dressing for all sorts of unhealthy and badly sloughing *ulcers,* using the solution in the strength of 1 to 20.

Lumbar Puncture. Armand Delisle[2] reported to the Societe de pediatrie de Paris a case of typical *cerebrospinal meningitis* which had been cured by lumbar puncture and warm baths. The cephalorrhachidian fluid was found to be cloudy, and it contained numerous polynuclear leucocytes. The patient was 4½ months of age. During the first ten days, lumbar puncture was performed, and 10 c.c. of fluid were withdrawn daily, but without any amelioration. For eight days longer the punctures were continued,

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(1) Progrès médical, April 20, 1907.
(2) Indian Med. Gaz., April, 1907.

but increasing the amount withdrawn to 25 c.c. This brought about a rapid diminution of the mental torpor, and the quantity was again reduced to 10 c.c., as at the beginning. In addition, warm baths were ordered to be given every three hours. A complete cure was obtained in a month. The total quantity of cephalorrhachidian fluid extracted during the course of treatment amounted to 400 c.c.

Magnesium Salts. Meltzer and Lucas[1] show that when introduced subcutaneously magnesium salts are eliminated to a great extent through the kidneys, and that in nephrectomized rabbits the susceptibility to the toxic action of magnesium salts is increased by about 50 per cent., and that the profound anesthesia of magnesium now may continue for twenty-four hours or longer. Furthermore, magnesium salts in nephrectomized animals have a cumulative effect, so that several small doses produce an effect equal to that of all the doses in a single injection. A dose which is fatal immediately after the nephrectomy causes only anesthesia eighteen hours after the operation, indicating that in the meantime vicarious paths have developed which eliminate part of the salts.

Magnesium Sulphate. H. Tucker[2] has used magnesium sulphate as a *local application* with gratifying success in about thirty cases. The application consisted of a saturated solution of magnesium sulphate and water applied in the form of a wet compress and left in place for twenty-four hours. The parts are then washed with water and the dressing is reapplied, if indicated. The majority of the cases reported in which the application was used were gonorrheal in origin, such as orchitis, epididymitis and rheumatism. It was also used successfully in two cases of erysipelas, one case of alcoholic neuritis of the lower extremities, and in two cases of traumatic neuritis. In these cases, however, the effect was not curative, but palliative.

Magnesium Sulphite. W. Kostenko has employed magnesium sulphite (sulphite, not sulphate) for years in the treatment of *dysentery,* with extraordinary good results. The remedy is almost tasteless, is entirely harmless and easily taken even by children. For the latter the dose

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(1) Jour. of Experimental Med.
(2) Jour. of Experimental Med., May 25, 1907.

is 0.2 to 0.5 gm. (3 to 8 gr.), and for adults 1 to 2 gm. (15 to 30 gr.), every two hours, in powder form.

The author's series comprises 164 cases, 56 of them being children. The results were strikingly good. In 26 per cent. of the cases the discharges were free from blood on the second day of treatment, while others recovered somewhat slowly. The author believes that the best and surest method of treating dysentery is by means of the specific serum. Where the latter cannot be employed, for some reason, or in milder forms of the disease, magnesium sulphite is to be resorted to as the best substitute.

Maretin. After using maretin as an antipyretic in twenty-five cases of *pulmonary tuberculosis,* Sommer[1] concludes as follows: In seven out of the twenty-five cases, maretin had a decidedly favorable effect, without injuring the heart or the vascular system in any way. Profuse perspiration did not trouble the patients, as is the case with so many other antipyretics. Since a number of the cases were already in the advanced stages of the disease, favorable results may be obtained in all stages. A decided collapse was observed twice after the administration of the drug, but both patients were very weak and exhibited pronounced fluctuations in temperature. In the other cases maretin did not prove to be of such value, for, while the temperature occasionally dropped, it could not be determined absolutely that the drug was the cause.

Mechanotherapy. In answer to an inquiry as to the reliability of the claims of the manufacturers of vibrators that they produce "stimulation, sedation, inhibition, in any tissue or organ, dissipate engorgements and congestions, with hasty elimination of waste and inflammatory products," H. W. Barnum[2] replies as follows: For the induction of stimulation, the vibratode moving in a very rapid manner is applied, starting up a correspondingly rapid succession of impulses, shakings and vibrations, causing an increase of the activities of the part—a fact long recognized by physiologists, especially by those who use electricity and massage. "The vibrator, much more effective than massage in many cases, simply makes use of the well known principle." Sudden and vigorous stimulation of the

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(1) Therap. Monatsh., March, 1906.
(2) Albright's Office Practitioner, April, 1907.

vagus inhibits the heart, which will stop under such stimulation. This nerve is also the secretory and motor nerve of the stomach. Gentle stimulation by applying the vibratode to the front edge of the sternomastoid muscle opposite the larynx will cause an increased secretion of gastric juices. In these cases stimulation should always be applied from the second to ninth dorsal nerves, inclusive, the application being made to the lateral processes of the vertebræ. The solar plexus and the stomach should also be stimulated by intermittently placing the vibratode deeply into the abdominal walls, which markedly increases the flow of gastric juice, as is verified by the rapid improvement of cases of indigestion submitted to the treatment.

The functions of the liver may be increased by the application of mild vibration to the dorsal centers, from the third to the eleventh, inclusive, and deeply over the organ itself, which will always increase the flow of bile.

"Sedation and inhibition are two degrees of progressive action. The former is produced when by continuous vibration to the affected organ we lessen the action. By continuing the vibration to the point of stopping all secretion or pain we induce inhibition."

In diarrhea, inhibition is induced by pressing the vibratode over the vagus continuously for three minutes. When applied to both vagi in this manner peristalsis ceases—inhibition. To check the increased secretion, apply deep pressure for twenty seconds to each center from the sixth dorsal to the first lumbar nerve, inclusive, producing inhibition. Acute cases by this method are cured in one treatment, and cases of chronic diarrhea after a longer period.

In sprained ankle with the characteristic conditions present—the stasis and congestion—we should stimulate the return flow to the vein and lymphatics. Beginning at the thigh, slide the vibratode over the tissues toward the abdomen, stimulating and unloading the vessels and glands, working downward towards the ankle, thereby inducing an active circulation to the whole leg. After this apply a soft vibratode to the swollen tissues, always sliding it towards the knee, which in a short time materially reduces the swelling. By repeating this daily for fifteen minutes the cure will be very rapid.

For congestion of the prostate gland apply the rectal vibratode directly to the gland with a mild stroke for two minutes, after which stimulate the tenth to the twelfth dorsal nerves to induce contraction of the prostatic blood vessels. Congestion is thereby relieved, and the case cured by a few daily treatments.

He reports results in two cases of neuritis. A case of brachial neuritis arising from exposure to the cold had the congestion and characteristic inflammatory stasis. To relieve the engorgements and inhibit the pain, the following method was employed. The vibratode was applied for a minute to each of the centers of the origin of the brachial plexus, with short stroke and increasing pressure as inhibition was obtained, and in the same manner to every sore spot upon the shoulder and arm. Every day the vibratode was moved over the surface of the neck, shoulder, arm and axilla in the direction of the venous and lymph flow, opening the blocked vessels and glands, thereby promoting increased circulation for the drainage of the engorged area. Six daily treatments for 15 minutes resulted in a cure. No relapse for three years.

Recently a patient with sciatica hobbled into the doctor's office. The skin was exposed over the area of pain, and the ball vibratode applied over the sciatic notch where soreness was found. Medium stroke was applied, with increasing pressure as inhibition was obtained. In two or three minutes the vibratode was moved ¼ inch higher up, and held as before, and continued until all the tender spots were treated, after which the spinal centers to the middle dorsal region were vibrated to include the area at the origin of nerve. The whole treatment required thirty minutes. The following day he received two treatments and felt much better. On the morning and evening of the next day he was also given treatments. The following day he resumed work and reported himself as entirely well.

Its Value. The subject of physical therapy in its many forms is still receiving too little attention, hence it is with pleasure that we call attention to an article by W. O. Rau.[1] We will give his conclusion:

In this short report I have merely given the outlines of

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(1) Med. Record, Aug. 11, 1906.

the treatment and of the work accomplished in eleven months at the hospital. I have mentioned only cases of patients treated at the hospital, because these patients were under the direct observation of the different surgeons of the hospital, who sent them to us. We were kept very busy, and a short time only could be given to each patient. If more time daily could be devoted to each case a better record could be obtained. The general results have been very satisfactory, and we think that the treatment deserves to be given due consideration by the surgeons and to be adopted in our hospitals. We think that if it is properly given it will lessen to a great extent the period of idleness following injuries to the extremities. This is especially important in the case of workingmen, when every day of idleness means a loss of wages and a hardship for the injured man and for his family.

Attention is called to the well known fact that placing a fractured limb in a splint for a time does not always procure functional recovery. Application of heat and massage bring up this desired result. Manipulation, passive movement, and even active movement aids to produce functional cure.

Menthol. Louis Amblard[1] has for the past three years systematically employed menthol in the treatment of various *gastric disorders*, especially those accompanied by pain. He finds that its effect is not limited to the relief of gastric pain, but that it can check vomiting. In virtue of its powerful antiseptic properties, and its analgesic action on the mucous membrane of the stomach, it has proved of the greatest use in those cases where pain and vomiting have been troublesome features. In all cases of dyspepsia characterized by pain, vomiting, sensation of fullness after eating, and distention, especially in those cases where there is no organic disease of the stomach, and in which these symptoms are the result of disturbance in the innervation or secretion of the stomach, menthol causes a marked amelioration of these symptoms; thus in chlorosis, in the dyspepsia of early phthisis, and in gastric neurasthenia, a marked improvement soon occurs. In the gastric crisis of tabes, menthol has proved most valuable in rapidly cut-

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(1) Jour. des Prat., Dec. 1, 1906.

ting short the attacks and allaying the pains. In several cases of intractable vomiting in pregnancy, checking this troublesome symptom after most of the other methods of treatment had been employed in vain. Even in some cases of simple ulcer or cancer of the stomach, where vomiting and pain have been marked features, menthol has given relief to these symptoms, and its use has never provoked hematemesis. In those cases of ulcer of the stomach where hemorrhage frequently occurs, the drug has not proved of service either in allaying the vomiting or in checking the hemorrhage. In prescribing the drug, only small doses are to be given, from 0.1 to 0.2 gram (2 to 3 gr.) being usually sufficient. The drug is best given in the form of a cachet with sugar or milk, once a day, and followed by a draught of water.

Mercury. The *New York Medical Journal* of November 17, 1906, reminds us that, inasmuch as the belief has become widespread that syphilis is one of the most important causes of *general paresis*, it has got to be more and more popular to make an attempt to delay the progress of the disease by mercurials. The ill-success attendant on the modes instituted in the earlier days of such treatment has been ascribed to insufficient doses, and the period of massive doses was a logical sequel, so that at the present time we find the use of enormous doses of mercury subcutaneously very often carried out, particularly in private practice.

Successful results have been reported, but they have been very few; and there have been not a few neurologists of note who have come to the conclusion that intense mercurialization is not only of little value, but probably productive of much harm. Their warning voices were made distinctly audible at the recent International Medical Congress, held in Lisbon, where Raymond, Sicard and Duprè were in accord in condemning the practice. Raymond has come to believe after an extensive trial that this method of treatment is dangerous, inasmuch as he has frequently observed a marked aggravation of all the symptoms following the beginning of the injections, in some instances leading to the extremely speedy death of the patient. He looks on the good results which have been observed from time to time as having been achieved not in general paresis but in syphilitic meningoencephalitis, which is often confounded with the former disease.

Sicard brought out the interesting fact that following the treatment the character of the spinal fluid remained the same, and that the mercurial treatment of paresis was to be used only in the presence of a frank complicating lesion. Duprè saw in the instances of reported improvement either remissions, which in paresis, as is well known, are very frequent, or faulty diagnoses, perhaps even more frequent. The use of mercurials is unjustifiable and tends, he believes, to add to the initial paresis the results of mercurial intoxication, namely, stomatitis, enterocolitis, tremor, dysarthria, agitation, mental confusion, hallucinations and subacute cachexia. The paretic, he thinks, does not bear the mercurial treatment as well as the tabetic.

The discussion is not closed, by any means, especially in view of the important fact that under the best of circumstances and with the aids of the most refined psychiatric technic the diagnosis of conditions resembling paresis is fraught with inscrutable difficulty. Even the best of psychiatrists recognize their inability to be certain in some 10 per cent. of the cases at least, and it becomes of vital importance to determine if in our anxiety not to let the small, indistinguishable tenth go untreated we must subject the nine-tenths to a process which may do the patients harm. Until we are in a better position, however, to make our diagnosis more certain, and until it can be shown beyond peradventure that massive doses of mercurials can produce disastrous results, psychiatrists will probably continue to deem it advisable to try to save the few, especially when the many are already doomed.

Its Relation to Nephritis.[1] It is probable that certain instances of nephritis met with in cases of long standing syphilis are less the consequence of the latter than of the treatment ordinarily employed. Clinically, at least, this appears evident, as is proved by many syphilitics, who have undergone an intense and prolonged mercurial treatment, presenting renal lesions of greater intensity than those of syphilitics who have employed mercury with more discretion. The intensive treatment, without doubt, has its de-

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(1) N. Y. Med. Jour., Dec. 29, 1906.

cided indication; but when once the accidents which it was intended to control have disappeared, great precaution is necessary; and it may be questioned whether mercury, no longer finding any spirochætæ in the organism, does not at this time bring its action to bear on the cells themselves. According to the *Journal des Praticiens* of October 27, 1906, Fournier and Balzer are inclined to this opinion. However, the difficulty is to know when the specific organism of the disease has disappeared.

There are two dangers surrounding the treatment of syphilis; namely, giving too much mercury and too little; and a careful observation of the case alone allows one to avoid them. It is quite certain that the kidneys are exposed to great danger by the absorption of mercury, and the lesions set up from this drug are more frequent than is generally believed. Acute nephritis, due to mercurial poisoning, has been described, but less importance has been attached to interstitial transformations, and these, quite evident from a microscopic standpoint, are no less so from the experimental side. Progressive in development, these lesions have no other origin than the absorption of mercury. Clinically, the same may be said.

In the chronic types of nephritis it is difficult to elucidate the action of mercury on the evolution of the process. There certainly exists a syphilitic nephritis in both the secondary and the tertiary period, demonstrated by the presence of albumin in the urine. Now, secondary and tertiary syphilitic albuminuria are generally influenced favorably by a mercurial treatment, and in its turn the latter is quite capable of producing albuminuria; therefore it is not easy to decide whether syphilis or mercury is the factor. There are several symptoms, however, which generally enable one to form an opinion. Syphilitic albuminuria may be accompanied by other manifestations of the pathologic process, and if these are wanting the action of the treatment will demonstrate its nature.

Urinary disturbances are usually bettered by mercury when the drug is given with prudence. In point of fact, there are very acute cases in which the renal epithelium has undergone a very general degeneration, and there no longer exists enough sufficiently normal tissue to assure both the elimination of the syphilitic toxins and that of the mercury. Consequently the medicament should be administered with precaution, observing the effects produced, and if the patient improves its use should be continued. On the contrary, if during a mercurial treatment the albuminuria increases, and especially if a large number of casts are eliminated and the albuminuria increases in intensity, treatment should be suspended. It is quite true that competent authorities have pointed out that mercurial albuminuria is slight in amount, a fact which distinguishes it from the albuminuria of syphilitic nephritis; and, still more, mercurial albuminuria is preceded by polyuria. All this is quite true, but not infrequently any precision in diagnosis from such indications is lacking. We do not refer to the condition of the gums, which is not sufficient, and the only proper way is a daily analysi of the urine in order to be sure of one's ground.

So far as tertiary nephritis is concerned, we must be more reserved. Frequently the renal lesion, which is attributed to syphilis, is of an entirely different nature, and merely indicates involvement of the kidney, due to premature senility the result of syphilis. To give mercury under these circumstances is to expose one's self to disasters, and all the phenomena of renal insufficiency will arise, dyspnea being the first to show itself. The use of mercury should be suspended at once, and theobromin, with a milk and vegetable diet deprived of salt, should be prescribed. Huchard has particularly insisted on this point.

In Scleroderma. P. Chirone[1] reports a case of scleroderma cured by mercury. The patient, a woman of 60, who had probably been infected with syphilis by her husband many years previously, began to suffer from a general itching of the skin, fainting fits, headache, loss of appetite, and constipation. Two months later her hands were often cold, with formication and pricking sensations; then the legs were similarly affected. The skin of the right hand grew tight, and involuntary closing of the hand followed; there was also a feeling of constriction about the chest which even embarrassed respiration. Scleroderma was then diagnosed, and a bad prognosis was given. Intestinal colic supervened and the scleroderma progressed.

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(1) Giorn Internaz. d. Sci. Med., Naples, November, 1906; British Med. Jour., March 30, 1907.

At this time—two and a half months after the onset of the coldness and formication—Chirone found that the skin of the face was a little thickened and hardened; that on the front of the chest it was very stiff and fixed to the subcutaneous tissues so that a deep inspiration could not be made. The skin of the neck was rather tense. The skin of the fingers was hard and tense; the fingers could not be moved freely and were fixed in a clawlike position. Over the rest of the body the skin was not abnormal. The ocular reflexes, the urine and the superficial and deep reflexes were normal. Treatment with iron, arsenic and the glycerophosphates did no good. Then mercurial inunctions were tried, with immediate improvement; later potassium iodid was given as well. In about a year the cure was complete; four years later no relapse had occurred. Chirone discusses the causation of scleroderma at some length. He is uncertain whether his patient was a syphilitic in whom scleroderma also occurred, or whether her scleroderma was merely a syphilitic manifestation closely resembling but not identical with true scleroderma.

In Gonorrheal Arthritis. L. Gaillard recommends injections into the kneejoint of mercuric chlorid in acute suppurative gonorrheal arthritis. After partial evacuation of the pus he injects 20 c.c. (5 drams) of a 1 to 4,000 corrosive sublimate solution, and repeats the injections several times, after evacuation of the previous injection. The knee is then wrapped in cotton, without compression, and put in a splint. This treatment avoids the necessity of arthrotomy. Besides the local treatment of the joint, the urethra is irrigated with potassium permanganate solution and salol is given internally.

Methylthionin Hydroclorid (Methylene Blue). Jacobi[1] contributes his views as to the value of methylthionin hydrochlorid in *inoperable cancer.* He tells us he usually attends a new case of cancer once a month at least. Of these, 20 to 25 per cent. are of the inoperable kind. Some that have already been operated on cannot be turned over to the surgeon again. Then will come methylene blue treatment. The author has seen such cases in fairly great numbers; they certainly count up in the course of fourteen

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(1) Jour. Am. Med. Assoc., Nov. 10, 1906.

or fifteen years. He has had one woman under observation for eight or nine years. She weighed 91 pounds at first observation; she was jaundiced and is jaundiced yet, and still weighs 91 pounds. Once in six months she reports that she is perfectly well. She is still yellow, still has lumps. Ordinarily she would have died seven or eight years ago.

Another patient is a business man under observation for six or seven years. At first he weighed 124 pounds; now he weighs 146. At first he was not able to attend to his business. For the last four or five years he has attended steadily to his business day in and day out. A large tumor in the epigastrium has dwindled away to about the size of a walnut. He is apparently well, and weighs 25 pounds more. He certainly knows that he is sick, and, accordingly, he will complain, but he goes from morning to night.

So the author has had a number of cases, but does not think, however, that he has ever cured a case. He has seen patients die during the treatment, but he has also seen them comparatively well, attending to business, living three, four, seven and eight years, and perhaps finally succumb to their disease.

In the last few months his attention has been directed to the large number of bodies that are favorably influenced by light, that have fluorescent qualities. It appears that methylene blue belongs to that class. He has commenced to expose his methylene blue patients to the sunlight; whether it will be of any use cannot be determined. He has exposed them in the solarium or in bedrooms, kept them there undressed for hours and hours, as long as their household or business will permit them. It is not impossible—it is even probable—that light will do a great deal more in connection with methylene blue than methylene blue alone. He believes positively that it has rendered him a great deal of good service in at least 120 or 150 cases in the course of the last fifteen years. He has not gone before the profession with his results to any great extent. Only now and then has he mentioned them before societies, but never to such an extent as now. A number of physicians and surgeons in New York have had their attention drawn to the subject and are trying the remedy. It is well tolerated.

He gives the drug in pills, in small doses, 2 grains a day, and runs up slowly to 3, 4 and 6 grains a day. He has heard of bigger doses being given, but has never required larger ones. He thinks the 2 or 4 grains should be made up in pills, with a dose of three-fourths grain of extract of belladonna daily. He knows that the extract of belladonna will relieve the dysuria much better than nutmeg, which has been recommended for that purpose. When we give 6 grains there should be three-fourths of a grain of belladonna given through the day, because adults will not bear belladonna so well as children. They are easily overdosed; they get dry throats in much less time than children with comparatively large doses. It is easy to give it in that way. The author frequently combines it with arsenous acid (arsenic trioxid). The dose would be 1/40, 1/30, up to 1/20 of a grain of arsenous acid three times a day. It can be made into pills with belladonna and methylene blue, and there is no harm, when occasion requires, to give strychnin or extract of nux vomica in order to make up the pill, so the prescription would be 2 to 4 to 6 grains of methylene blue in four doses. It is best given after meals, one at bedtime, with perhaps 1/10 grain of strychnin and 1/10 grain or more of arsenous acid a day, with or without a vegetable purgative, if that be necessary.

Patients should be told at once that the urine will be blue from the very beginning, that it will stain the linen, and that the stains cannot be removed. Therefore the author advises his patients to have an old handkerchief handy and to wipe off the last trace of urine. Apart from that, patients will not suffer any inconvenience. In his experience, not one in twenty will complain of dysuria. The belladonna appears to act very well. He has recommended it in a number of cases operated on in order to prevent relapses. It is impossible for him to speak with mathematic certainty about the results of that, but he believes that relapses have been prevented. He would recommend it in every case of cancer of the uterus that has been operated on and when relapses must be feared. He believes he has seen fewer relapses since that has been done. Still, an actual statistical proof of negative experience can not be had.

Because he considered the matter of too great importance to be published prematurely, the author has not spoken of it extensively before. He wanted to be perfectly sure about his results. He wanted to have a sufficient number of cases to base his assertions on. He believes he has now waited long enough, and thinks that after fourteen or fifteen years one is entitled to speak of a subject that appears to be of great value. It has done a great deal of good in his practice. It is his belief that he has certainly restored a good many people to their work, and has kept a number of people alive two, three, six and eight years longer than would have been their share.

Henry R. Slack,[1] of LaGrange, Ga., since his previous report, ten years ago, has treated 29 patients, the cases of three of which he reported at the recent meeting of the Medical Association of Georgia. He selected these three cases not because they have given the most brilliant results, but because of their peculiar interest. Case 1 had been pronounced an inoperable carcinoma of the breast over four years ago, had yielded for a time to Roentgen rays, but after several burns, tolerance was established and the disease spread, causing much pain and destroying health. On administering and applying the methylene blue, the disease again yielded, and the patient is now enjoying fairly good health and is free from pain. Case 2 was an epithelioma of the left lower lid, which was benefited by Roentgen rays, but the patient did not get well until the methylene blue was used. Case 3 was one of carcinoma of the uterus following laceration of the cervix, which is being arrested by administration of methylene blue alone.

Of the 29 patients treated with Roentgen ray or combined with methylthionin hydrochlorid, 12 have been dismissed as cured and 5 have gone over three years without recurrence. The other seven, ranging from five to thirty months since dismissal, show no evidence of return. There are 9 still under observation, 7 of whom are doing fairly well, as the disease is in abeyance. They suffer very little and are able to attend to their usual duties. Of the 12 patients cured, 8 had epitheliomas, 3 carcinomas, and 1 a sarcoma.

His experience with the methylthionin hydrochlorid teaches him to expect the following results: 1, Everything

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(1) Jour. Am. Med. Assoc., May 11, 1907.

with which it comes in contact is stained a deep blue, the urine soon looks like blue ink, and the practitioner should always tell the patient to expect this; 2, there is surcease from pain; 3, the general health of the patients is improved and years are added to his life.

Migrophen. This is a combination of lecithin with quinin, and unites the action of both drugs, being especially valuable against *headache,* which it is said to promptly suppress in acute as well as chronic cases. It is much more effective than the older remedies, and may be given in doses of 0.25 to 0.5 gm. (4 to 8 gr.), to be repeated in one hour if necessary. It may be taken in wafers in order to mask its somewhat bitter taste. Hollstein has tested migrophen in anemic, neurasthenic and hysterical headaches, with invariably good results. In headaches accompanying so many acute diseases the remedy has also proved successful. The poorest and least encouraging results were obtained in headaches of intestinal origin. The remedy is put on the market in powder form as well as in the form of chocolate-coated tablets.

Milk Enemas. Remarkable results in the treatment of *internal hemorrhage* are reported by Solt[1] from the use of enemas of milk, warmed to body temperature, and best introduced by a piston syringe; the intermittent flow gives better results than a constant stream from a fountain syringe. He has stopped a large number of hemorrhages from the uterus, bladder, stomach, lungs, and, in fact, from every part of the body. In some cases more approved hemostatics had been used for hours without result, and the milk was immediately successful. At least a quart should be given at once, with nothing added but a little salt to cause it to be absorbed more rapidly. The enema should be repeated in an hour, even if there is no return of the hemorrhage. The usual local measures are employed at the same time. The method of its action is not certain, but milk contains a large number of substances which are recommended as hemostatics—iron, phosphoric acid, sulphuric and citric acids; but, above all, lime salts. The enzymes and leucocytes also tend to cause an increase in

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(1) Therap. Monatsch., No. 10, 1906.

the fibrin ferment. The milk loses its hemostatic power if it is given by the stomach.

Naphthol. The *Journal de medecine de Paris* (January 13, 1907) recommends a 10 per cent. ointment of naphthol to be kept on for half an hour in ringworm, after which time it is removed and the surface washed with soap and water. On the next day a slight reaction or desquamation of the affected part is to be observed. The application is then to be repeated, and in the course of eight to fifteen days the desquamation is complete. No cicatrix is produced. If there should be too much irritation of the skin, an emolient can be applied. In obstinate cases, 10 per cent. of camphor may be added to the naphthol, but in this case the application should only be made for a quarter of an hour. Another formula is:

Resorcin	2.5 parts
Zinc oxid	5 parts
Starch	5 parts
Petrolatum	12.5 parts

This ointment is allowed to remain on the affected part for a day and a night, at the end of which time it is removed with the aid of oil.

Nitroglycerin. H. P. Loomis[1] has tested the effect of this drug on *arterial pressure* in patients by means of the sphygmomanometer, and also in animals, and finds that high arterial pressure in man is not perceptibly affected by it, nor its dilatation of the blood vessels apparent. Some of the conclusions reached are as follows: The usual dose of nitroglycerin, of 1/100 grain, is too small to produce any effect in pathologic conditions; 1/50 grain is a minimum dose. It is a perfectly safe drug to use. Even in large and repeated doses the author has never seen any ill-effects. Its effects are very transient, as shown by the experiments on dogs, and the ordinary dose of 1/100 grain every four hours could not possibly have any effect on the arteries. Nitroglycerin is said to increase the quantity of urine in chronic Bright's disease, but after keeping accurate records of the daily amount of urine passed, the author was never able to satisfy himself that any increase seen was due to this drug. In conditions due to arterial spasms, so called, such as angina pectoris, migraine, asthma, nitroglycerin may be of benefit in full doses, often repeated, but not in arterial

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(1) Med. Record, March 18, 1905.

sclerosis, where the arteries themselves are more or less changed.

Novaspirin. Kurt Witthauer,[1] of Halle, reports on a modification of aspirin, which he calls novaspirin, and which he claims is an improvement on the former product. It is a disalicylic acid ester of methylen citron acid. The percentage of salicylic acid that it contains is 2 per cent. It is a white crystalline powder with a weak acid taste; is practically insoluble in water, and is borne by the stomach without irritation. Five case histories are reported very briefly as bearing on its therapeutic efficiency. The author concludes his study by stating that he believes (1) novaspirin has less action on the stomach than aspirin, (2) that it acts more slowly than aspirin, and must be given in larger doses, (3) its antipyretic action is good, and its diaphoretic and analgesic actions are less than aspirin, and (4) it is particularly available in influenza.

Nux Vomica. J. H. Musser[2] thinks the initial dose in gastric neuroses should be small, the dose being increased to the point of tolerance, this furnishing the best results. The drug is most useful in the *asthenic cases,* those that are underfed and underweight and suffer from the local and general fatigue symptoms. A similar treatment the writer has found useful in hyperchlorhydria, particularly in those cases which were not relieved by sedatives—in short, where the hyperchlorhydria does not result from a local irritating lesion, but is the expression of a gastric neurosis due to the persistence of general atony or anemia. The patients without obvious gastritis or ulcer generally bear the stigmata of an exhaustive neurosis, and they are thin and weak and often hypochondriacal. They may have suffered from uterine or ovarian disease, and often show signs of gastroenteroptosis. They are usually constipated. It is in this class of cases that the best response is obtained from the action of increasing doses of nux vomica.

Opium. Burney Yeo[3] thinks the best test of the judgment and clinical capacity of a medical practitioner consists in the way he uses opium. Caution in its use and dosage, especially the hypodermic use of morphin, is always to be kept in mind. Its greatest use is to relieve pain, especially when accompanied by spasm. It is now seldom used as a hypnotic. The author approves of the various combinations of opium, apart from the alkaloids, as still having great utility, and applies them as near as possible to the seat of the diseased condition which they are designed to relieve. He admonishes that all secretions, except those of the skin, are checked by opium, hence the propriety of combining an hepatic stimulant with it. Among the conditions for which opium is a valued remedy he mentions acute gastritis, chronic gastric catarrh, chronic gastric ulcer, with or without perforation; cancer of the stomach, painful affections of the intestine, including chronic diarrhea, and acute dysentery. It is often helpful at the beginning of acute peritonitis. It is seldom indicated when disease of the circulatory system is present, and it must be given cautiously in connection with respiratory disease. Heroin and codein are considered the best derivatives of opium in the treatment of pulmonary phthisis.

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(1) Berl. klin. Woch., Jan. 21, 1907.
(2) Therap. Gaz., Nov. 15, 1905.
(3) Practitioner, May, 1907.

In Pyloric Hypertrophy. N. Neild[1] finds excess in the muscular tissue of the pylorus, (1) as a complication with gastric ulcer, cancer, etc.; (2) as a complication of movable kidney; (3) as the result of a gastric motor neurosis; (4) in infants in the form of congenital stenosis. Spasm of the pylorus, if frequently repeated, will also cause it. Dietetic and medicinal treatment of this condition have usually given poor results, and the same is true of lavage. As a substitute for gastroenterostomy the author has found the opium treatment very satisfactory. He administers it in the form of the tincture, three to ten minims being given in two teaspoonfuls of water twenty minutes before taking food. The dose should vary with the number of meals and the degree of dilatation. The action of opium in this instance is that which it has on unstriped muscle everywhere, namely, antispasmotic. In the pyloric hypertrophy which is associated with gastric ulcer the opium should be given half an hour before the usual time when pain shows over-action. Even in those cases of pyloric spasm in which hypertrophy is not apparent the use of opium will be found beneficial.

Organotherapy. Gilliford B. Sweeney[2] advocates the use in *tuberculosis* of a specially prepared compound. From bullocks free from tuberculosis is made a mixture composed of contents of the thoracic duct, extract of brain and spinal cord, and spermatic fluid. To this sterilized mixture are added the chlorids of gold and sodium, grs. 1/60 to the dose. The preparation is given by injection, intermuscularly every second day, every day or twice a day, "according to the exigencies of the case." It exerts its action through the "immunizing action of the lymphocyte," its "antitoxic influence" and its effects as a "powerful cell tonic, alterative and reconstructive."

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(1) Charlotte Med. Jour.
(2) Practitioner, May, 1907.

In 600 cases he reports 68 per cent. of cures. Obviously, hopeless cases were not treated.

Oxygen. Spivak[1] points out the value of oxygen in obstetric practice. He says that quite frequently it happens that while the obstetrician is busy in checking a postpartum hemorrhage, or in repairing a lacerated perineum, it falls to the lot of the attending nurse to look after the needs of the neonatus. In cases of asphyxia she even assumes the rôle of a goddess in actually "blowing into his' nostrils the breath of life." Under the guidance of the attending physician many a nurse has resuscitated an apparently dead child by the various methods, mechanical, medicinal, etc., known to the modern practitioner.

At the maternity department of St. Luke's Hospital, Denver, in desperate cases of *asphyxia neonatorum,* a novel method has been adopted at the independent suggestion of two nurses, each unknown to the other. In one case, after having exhausted all his skill, resources and strength, the attending physician concluded that the child was beyond human aid, and left the hospital in despair. The attending nurse cast her eye on the tank of oxygen which was standing in the corner of the room, and decided to make an experiment of her own, even at the risk of incurring the displeasure of her superior. She turned on a stream of oxygen into the nostrils of the baby, and was overawed to see the infant take its first breath. On the following day the attending physician was amazed to find a live baby in the arms of its mother.

The other nurse, in a similar case, timidly suggested to another attending physician, after he had "thrown up

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(1) Med. Record, Nov. 10, 1906.

the sponge," to use oxygen. He did not protest against her audacity to express an opinion in his august presence, but grasped at the opportunity of trying a novel procedure. He was repaid by having saved a human life and the gratitude which shone in the eyes of the parturient woman and nurse.

Having obtained the permission of the physician and nurses to publish the above, and after consulting the recent text-books on obstetrics, the available current literature and several prominent obstetricians without finding any record of the use of oxygen in asphyxia neonatorum in this country, the author concluded that the subject deserved to be brought to the attention of the medical profession for the purpose of further research, discussion and experiment.

In Infected Wounds. Very good results in the treatment of infected wounds with injections of oxygen gas are reported by Wohlgemuth,[1] who uses the following technic: The pure gas is held under a pressure of 100 to 120 atmospheres and passes through a cannula which is inserted as deep as possible into the wound, and the gas allowed to flow until all the secretion has been removed. A needle is then put in place of the cannula and subcutaneous injections made in the surrounding tissues. The stream must have force enough to cause a marked emphysema, and is kept up in each spot for half a minute. The wound is then dressed with a 2 to 3 per cent. peroxid solution. The injections are made every day if necessary to keep the wound clean. The distention causes some pain, which soon passes off. The method has been used in all sorts of infected wounds with good results. In some cases of purulent peritonitis with drainage the cannula was inserted through the abdominal wall and a constant stream kept up, the gas bubbling out of the fistula. The results were excellent. The injections are of especial value in old inflammations with dusky discoloration of the tissues. The injection changes the color to bright red, and the stasis improves at once. Oxygen acts by increasing the resistance of the body cells.

In Sciatica. Massalonga and Antis[2] describe their suc-

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(1) Therap. Monatsh., Nov. 9, 1906.
(2) Il Policlinco, September, 1906.

cess in the treatment of sciatica by this method. They explain sciatica and other neuralgias as a result of disordered metabolism, the by-products of which poison the nerves. The presence or absence of neuritis is thus simply a question of degree. They state that the frequent injection of oxygen under the skin and deeply among the muscles influences the local and also the general metabolism, stimulating the circulation in the nerve trunks and the nerve sheaths and thus facilitating the elimination of morbid products. By experiments on the cadaver and on animals they have satisfied themselves that oxygen injected by their method spreads deeply and comes in contact with the nerve trunk near the place of injection. The result of the treatment is twofold—the relief of the pain immediately and the improvement of the anatomic condition of the nerve. All cases treated were severe, either in intensity of the pains or from their long duration. Twenty cases are recorded. Nine were completely cured with ten or twelve injections and in less than a month, the quantity of each being from 250 to 400 c.c. of gas. The other eleven cases were completely cured in less than two months. Each injection was made deeply with the long needle of a Pravaz syringe, inserted usually into the most painful point of the skin. The needle communicated by means of an india-rubber tube with a tank of oxygen. Antiseptic precautions were employed and no ill effects, local or general, followed in any case. A case reported was that of a man, aged forty-three, who suffered for six years from a right sciatica. For two months he was treated without benefit with blisters and frictions. Pressure along the sciatic nerve was very painful, especially between the trochanter and the tuberosity of the ischium, at the outer side of the hip and over the external malleolus. Six injections of oxygen were made at the most painful spots and three deeply over the course of the sciatic between the muscles. Cure followed and was completed in twenty-two days.

The writers did not attach much value to theories by which such treatment is supposed to act by stretching the terminal nerve filaments or by forming a protective cushion of gas over the nerve endings.

Pancreatic Enzymes. M. A. Cleaves,[1] in discussing the use of the pancreatic enzymes in the treatment of *cancer*, reminds us that the pancreas yields three enzymes: trypsin, amylopsin and lipase. Of these trypsin is as exclusive in its action on the proteids as lipase is in its action on fats, and the third, amylopsin, acts on the carbohydrates. Of the pancreatic ferments two are used, an injection of trypsin, which is prepared directly from the fresh pancreas especially for hypodermic use. It contains the trypsin in its normal association with the other soluble enzymes and constituents of the pancreas secretions. The second—amylopsin—is a solution of pancreatic diastase (amylopsin) devoid of the proteolytic (trypsin) and fat splitting (lipase) ferments. It is also especially prepared for hypodermic use. The methods of administration are: 1, Hypodermic, (a) into the subcutaneous tissues, (b) into the tumor mass; 2, by rectum; 3, by mouth. The administration of the pancreatic ferments is almost exclusively by hypodermic injections, combined with the local application of a pancreatic lotion and a trypsin powder in suitable localities. According to Cleaves, unless the ferments are directly injected into the growth no results are obtained. This is in direct opposition to the author's observations. The dose of trypsin hypodermically varies and is governed by the pathologic condition and by the condition of the kidneys before and after treatment is instituted. In nonmalignant conditions large and long continued doses are well borne, as there is no reaction other than the local one at the site of the injection. In patients suffering from malignant conditions the doses must vary according to the patient's ability to take care of them. Small and infrequent doses seem to bear a definite relation to long and protracted toxic conditions. If given by rectum the dose should be twice that of the customary hypodermic dose, and it should be diluted in from two to three times its volume of cold sterilized water. The rectal tube should be carried high up into the bowel for at least 9 to 12 inches. In cases of cancer cachexia, with the moderate loss in hemoglobin, a marked improvement is shown, although the daily deviations are greater

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(1) Med. Record, June 1, 1907.

than 5 per cent. A moderate leucocytosis immediately follows the injection of trypsin. There is no cumulative effect exhibited by the white blood count. It seems that trypsin acts on intercellular matter of a definite configuration, following the selective law of enzymes, and that the result is a pathologic quantity of glycogen throughout the body, manifested especially in the eosin granules and to a certain extent probably stored up in the muscles. As the result of the trypsin treatment of cancer there is produced a profound irritation of the sympathetic nervous system. This is markedly evidenced by interference with the circulation in glandular structures, a breast, for example. While the daily urine analyses have not established clearly a definite relation between the treatment and the output of urea, there does seem to have been noted a tendency toward the lessening of the urea following the injection of trypsin, which can readily be explained on the ground of the interference of the circulation in the glandular structure due to the irritation of the sympathetic nervous system. On the other hand, in a number of instances, an increased output of urea has been observed on the administration of amylopsin. Another and invariable evidence of the irritation of the sympathetic nervous system is shown in the complete relaxation of sphincter muscles; for example, the anal sphincter, the urethral, that of the os uteri, according to the site of the disease. Trypsin and amylopsin are excreted mainly by the kidneys, producing a nephritis more or less extensive. Granular casts appear in the urine almost immediately after the first doses of the ferments. The nephritis does not seem to be progressive, the casts and albumin remaining pretty constant unless the dosage is increased. A single superposed dose of three ampoules has been seen to produce epithelial casts. It is difficult to dissociate the predisposition toward indicanuria resulting from the ferment treatment from the characteristic indican of cancer. Treatment should be undertaken early in every instance, and should always be an adjunct to surgical interference in every postoperative case. Metastases should never be allowed to develop. The importance of removing a diseased organ must never be lost sight of, and the enzyme treatment should be carried on with a full recognition of the value of skilled surgical interference when possible. The indications are that the use of the enzyme treatment will have to be continued over long periods of time and perhaps at intervals during life, but as the absence of pain is a constant accompaniment, it would seem logical and better to have a patient with the trypsin necessity rather than the morphin habit.

Trypsin in Cancer. In a communication from von Leyden's[1] clinic, two laws regulating the growth of cancer are specially emphasized, namely, the fact that in its origin and growth carcinoma is a strictly local phenomenon, and that its most striking feature is its unlimited proliferating power. It is also pointed out that the tumor reacts with increased growth to all kinds of injuries, mechanical, thermic and chemical. For half a century medical science conducted its research on cancer almost exclusively along morphologic lines, but now the questions are: Is there a specific production of substances in cancer? Is it possible to induce a specific destruction of these substances? Research has shown that there is probably a production of a specific albumin in malignant tumors, and that this albumin is promptly digested by the ferment trypsin. The experimental experiences with trypsin, so far reported, show that larger amounts of trypsin pass into the blood when it is given by the mouth than when it is injected subcutaneously. Injected directly into a carcinoma in man the results proved disappointing. The resulting digestion of the cancer cells was always circumscribed and there was no question of a cure in any case. Given internally, even for long periods and in large amounts, no decisive influence could be demonstrated in case of inaccessible internal carcinoma. On the other hand, nearly every case of carcinoma of the stomach, not too far advanced and still free from metastases, exhibited an unmistakably favorable reaction to the trypsin. The verdict from this clinic is, that trypsin to date, while displaying a curative influence, cannot yet be heralded as a definite method of treatment. A new fact has been learned, however, possibly of far-reaching importance, namely, that a tumor whose cells have been digested (dissolved) by the trypsin in some circumscribed area never reacts to this in-

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(1) Zeit. f. klin. Med., lxi, No. 4.

terference with increased growth, either locally or in general. This fact recalls the selection in respect to injections of radioactive substances. This exceptional absence of increased growth under the influence of the trypsin von Leyden regards as significant, showing an actual specific destructive process even if it is only temporary.

Graves[1] reports in detail on four cases of recurrent *cancer of the breast* on which he used injections of trypsin. He began by injecting 10 m. of the undiluted trypsin solution, and after two or three treatments increased this to 40 m. three times each week. He says that this dose may be increased to 60 m., or more, if the injections are given in divided doses and in different areas. The amount of injection and the frequency of treatment must be determined by the amount and severity of the local constitutional reactions. His conclusions from these cases are as follows:

First: A discrete cancerous node systematically attacked by injections of trypsin shrinks and becomes hard and fibrous or disappears.

Second: Neighboring nodes are little, if at all, affected, and are probably influenced only when the trypsin comes into actual contact with the growing cells.

Third: The treatment of a given node, causing it to shrink or disappear, does not prevent the appearance later of another node in immediate proximity to it.

Fourth: There is no evidence in these cases to show that trypsin affects cancer cells by circulating in the blood, or that it affects them in any way excepting by direct contact.

Fifth: The internal administration of the various ferments of the pancreas is of benefit to cachectic patients; but from his experience there is nothing to show that this benefit is due to anything else than the assistance given to the intestinal digestive secretions of the individual patient.

Sixth: The direct action of trypsin on growing cancer cells, as shown clinically and microscopically, is sufficient warrant to continue the treatment in inoperable cases, es-

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(1) Boston Med. and Surg. Jour., Jan. 31, 1907.

pecially in view of the fact that there are apparently no serious results that can occur from its use.

Bainbridge[1] has employed trypsin in a few cases with unsatisfactory results. He cautions against the formation of premature conclusions in any case in which the trypsin treatment is employed and refers in particular to one case which had been under his care and which had been reported by others as a cure. He says that the observations made thus far are too incomplete to warrant making any definite statements as to the value of this treatment. It should be tested scientifically, and while it is being so tested all judgment as to its efficacy should be suspended.

Paraganglin. Bellotti[2] reports a severe case of *eclampsia* in a young woman who was eight months pregnant.

The woman had been very well during her pregnancy until the end of October, when she had an attack of tonsillitis; three days after she was convalescent, she was seized with severe headache and intense vomiting, prolonged by an eclamptic fit. Morphin was injected which induced another fit, and rectal injections of potassium bromid and chloral were given, followed later by chloroform inhalation and abdominal friction with guaiacol oil. The convulsions went on all night, and more chloroform, bromid and chloral were given in the morning and ice applied to the head. As no relief was obtained (induced labor was not considered advisable) and the patient was getting more feeble, 2 c.c. of paraganglin vassall were injected subcutaneously; half an hour later the patient passed copious urine and feces, sweated profusely and complained of great thirst. The os was now somewhat dilated and the patient mentally clearer; 2 c.c. more were given, and labor, followed by the birth of a living eight months' fetus, at 11 p. m., pursued its normal course. There were no more fits. The author believes that the good results were due to the paraganglin, which he believes has an action somewhat analogous to that of parathyroidin. Paraganglin may be given hypodermically, without fear, every three hours in doses of 2 c.c. In addition to its antidotal action against the eclamptic poison, it increases

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(1) N. Y. Med. Jour., March 2, 1907.
(2) Gaz. degli Osped., Jan. 20, 1907.

the functions of the emunctory organs and provokes uterine contraction.

Perhydrol. A. Bohme,[1] of Marburg, describes a new method of *preparation of milk* worked out by himself and Much in the Behring Institute of Marburg. In the milk vessel a small amount (3.3 c.c.) of perhydrol (30 per cent. hydrogen peroxid) is added to 1 liter of milk. After six or eight hours, during which time the milk is best kept in the dark, it is heated for one-half hour at a temperature of 52° C. (126° F.), after which it is placed in the dark for from two to twelve hours. Catalase, 0.25 c.c., is then added, this amount being sufficient for one liter of H_2O_2, by which the H_2O_2 is broken down completely, and the milk is then ready. By this procedure the tubercle bacillus, as well as all other pathogenic organisms, is definitely killed. All the spores are not killed, but the milk is found to hold well for some time, and is very poor in bacteria. Practical feeding experiments were carried out in the Marburg Children's Clinic. The taste is similar to the uncooked milk, and is not refused by the infants. It is employed in the various milk mixtures in a manner quite similar to the various cooked milks, and in an experience lasting over three months, nursing and older infants were found to thrive upon it. The authors believe that with some modifications in the technic that the use of perhydrol in milk will solve one of the most difficult problems—that of supplying germ-free milk to infants in large cities.

As a Surgical Antiseptic. Rubin Bierer,[2] of Lemberg, reports on his experiences with the use of perhydrol (hydrogen peroxid, 30 per cent.) as a surgical antiseptic, and also in the treatment of local infections of mucous membranes, notably in diphtheria. In the treatment of abscesses, he uses 10 c.c. (2½ drams) of a 1 to 10 perhydrol solution, and injects about the margin of the abscess. In mastitis he believes he has been able to limit the spread of the pus formation by the use of the same dilute perhydrol solution. In the treatment of diphtheria he cauterizes the affected parts with a 30 per cent. solution of the perhydrol. For sprue this preparation of hydrogen peroxid has proved efficient in his hands also. In its full strength the author

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(1) Allg. med. Centr.-Zeit., 1906, No. 48.
(2) Allg. med. Centr.-Zeit., 1906, No. 49.

found perhydrol useful as a cauterant for gangrene, and for phagedenic and typical chancres.

Perosmic Acid. This remedy was recommended in 1884 and has been employed by several authorities in the form of subcutaneous injections. Dr. Hohmeier recommends the early use of perosmic acid in *trigeminal neuralgia.* If these injections fail, then operative treatment should be resorted to. A 1 per cent. solution in water is usually employed and of this 1 c.c. (15 min.) is given at one injection. In order to reach as much as possible of the nerve fibers, one-half of the fluid is injected at the respective foramen of the diseased branch of the trigeminus, while the other half is injected into the surrounding tissue. The pain disappears after about five days.

Phenolphthalein. Phenolphthalein[1] is a yellowish powder, very slightly soluble in water, readily soluble in alcohol and in aqueous solutions of hydroxids and carbonates. It is colorless in acid solutions and red in alkaline liquids. So far as our present knowledge goes, it produces no noticeable physiologic effect except that of a *purgative.* When absorbed it is excreted in the urine, unchanged in chemical character, but sometimes in combination so that its characteristic color with alkalies is only shown after the combination is broken up by heating with an acid. It has long been in use by chemists and clinicians as an indicator of alkalinity in determining the acidity of gastric contents, urine, etc.

Its introduction into therapeutics is more recent and has attracted comparatively little attention. The discovery of its purgative properties is stated to have been due to its use in artificial Hungarian wines to prevent their substitution for the genuine wines. It was noticed that when these cheap wines were "denatured" by the addition of phenolphthalein their use was regularly followed by diarrhea. This led to the introduction of phenolphthalein as a proprietary remedy, and it has been advertised in Europe, especially in Great Britain, for the last five years under the name of purgen. Other trade names for phenolphthalein or substances containing it are also given.

As yet it has received little attention from pharma-

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(1) Jour. Am. Med. Assoc., March 30, 1907.

cologists, its medicinal use remaining unnoticed in the latest textbooks, even so extensive a work as the "National Dispensatory" stating that it is not used in medicine.

The investigations of Vamossy, Dornbluth, Tunnicliffe and others seem to show, however, that it is a safe cathartic, acting without pain, in from four to six hours, and leaving less tendency to sluggishness of the bowels as an after-effect than other cathartics. From the evidence presented it would seem that phenolphthalein will be valuable in the treatment of habitual constipation.

In Martindale and Westcott's "Extra Pharmacopœia" (British), page 24, it is stated that phenolphthalein is "useful where a prompt purgative is required as in 'jaundice,'" and further that it "does not irritate the kidneys."

The dose generally recommended varies from 0.06 gm. (1 gr.) to 0.3 gm. (5 gr.), but it must be borne in mind that certain individuals possess a marked idiosyncrasy to phenol compounds, and that in such cases phenolphthalein should be prescribed with caution. It may be given in the form of pills, capsules, tablets or powders. It may be prescribed as follows:

℞ Phenolphthalein ....ʒi 4|
Div. in capsulæ No. xx.
Sig.: One capsule at bedtime when necessary.
Powders may be ordered instead of capsules.

Phenol Salicplate. One of the most valuable of all drugs used for *cystitis* is salicylate of phenol. This consists of about 65 per cent. salicylic acid and 35 per cent. phenol; is decomposed slowly in the intestine by the pancreatic fluid into its original constituents, and is eliminated through the urine as urate of salicyl, though if given in large quantities some seems to pass into the bladder unchanged. In 5 grain doses every three hours it effectually prevents decomposition of urine in the bladder and keeps it from becoming alkaline. It cannot be continued very long on account of producing phenoluria. Whenever the urine becomes smoky, boric acid should be substituted for a few days.(1)

Phosphorus. Editorially the *Scottish Medical and Surgical Journal* for November, 1906, gives an interesting résumé of The Comparative Therapeutic Value of Organic and Inorganic Combinations of Phosphorus.

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(1) Amer. Jour. of Clinical Med.

Phosphorus exists in the body in one or other of two forms, inorganic and organic. The most important of the former is calcium phosphate, which forms a large part of the bones. The organic combinations are extremely complex bodies, and the most notable of them is lecithin, which is derived from phosphoric acid and glycerin. The substance, "along with its congeners cephaline and protagon, form essential constituents of the nervous system, and are so immediately concerned in its functional activity as to give rise to the dictum that without phosphorus there can be no thought." In tissues other than nervous we find organic phosphorus compounds in the form of nucleins and nucleoalbumins, especially in the muscles, the thymus and thyroid, the liver, the kidneys, and the spleen.

Seeing that phosphorus in one form or other is present in so many and in such important structures in the body, it is only natural that its therapeutic and dietetic uses have attracted a great deal of attention.

In an interesting paper Dr. Tunnicliffe gives a short résumé of the work of pharmacologists on this subject during the last thirty years. The story, it must be said, is rather a perplexing and disconcerting one from the point of view of the practitioner, who looks to the pharmacologist for guidance as to the value of the drugs he uses; for the results of experiments have not seldom been quite conflicting.

In former times inorganic phosphates and hypophosphates enjoyed the unanimous confidence of the medical profession, and they were thought to be of great value in a large number of diseases, especially in childhood. Toward the end of the nineteenth century this belief was vigorously refuted. It was said that when they were given by the mouth they could afterward be recovered in undiminished quantities from the feces. Their use was accordingly condemned as altogether futile. On the other hand, lecithin was found by Danilewsky, in 1895, to have an extraordinarily favorable influence upon nutrition, even when given in the most minute doses. A little later the use of glycerophosphates was strongly recommended by Bulow and Pascales on the ground that the phosphorus in lecithin was present in this form. Their observations seemed to be strongly confirmed by those of Robin and by Sanson's experiments. The glycerophosphates came consequently largely into use, especially in France, as nervine tonics and stimulants.

The next class of organic phosphorus compounds to be advocated were those in which the phosphorus is combined with proteids, such as casein. Most observers have found those bodies to be very thoroughly absorbed.

In recent times the decisions of former authorities have been freely disputed by Ehrstrom, and also by Vosgien and Ceroline, who found that inorganic phosphates were absorbed from the alimentary canal and influenced nutrition quite as much as the glycerophosphates. Keller, too, found that sodium phosphate, when given to young babies, was largely absorbed, and its phosphorus appropriated by the tissues. He regards it as still unsettled whether organic combinations of phosphorus are absorbed any better than its inorganic salts. Rohrmann and his pupils, on the other hand, have continued to maintain the uselessness of inorganic phosphorus combinations.

In order to reach some more definite conclusions as to the best forms of phosphorus to administer, Dr. Tunnicliffe instituted a series of experiments to prove (1) whether in the healthy human child it is possible by increasing the phosphorus of the diet to increase the amount of phosphorus retained in the body; (2) to compare the value as sources of phosphorus to the body of an inorganic and organic phosphorus compound; and (3) to observe the effect of an inorganic and an organic phosphorus compound upon proteid assimilation.

In Dr. Tunnicliffe's experiments he used as an organic compound the substance known as "sanatogen," which is made up of glycerophosphoric acid and pure casein. For an inorganic compound he gave calcium phosphate. The experiments were made on two young children.

The general conclusions arrived at are given as follows:

1. In the healthy child the addition of an organic phosphorus compound to the diet is followed by an increase in the amount of phosphorus assimilated by and retained in the body.
2. The addition of an organic phosphorus compound to the diet of children increases the amount of the nitrogen

of the food assimilated.

3. The addition of calcium phosphate to the food did not increase the amount of phosphorus assimilated or retained by the child, nor did this compound exert any favorable influence on the assimilation of the nitrogen of the food.

In Laryngeal Affections. W. C. Cooper[1] says that the supreme expressiveness of phosphorus has reference to the larynx. Whatever may be its virtues outside of this region, it is peculiarly at home here. "It is my stand-by," says Dr. Cooper, "in nearly every form of aphonia and hoarseness. It is far better than any other remedy I have ever tried in these conditions. For a purely laryngeal cough, it certainly has no equal. I have tested it in many hundreds of these cases. I have used the drug hundreds of times in laryngeal troubles, and always with great satisfaction. In chronic throat-coughs I have been in the habit, for some years, of prescribing a combination of the tincture of phosphorus and sanguinaria. I make a 4 ounce mixture like this: Specific phosphorus, 20 drops; specific sanguinaria, 30 drops; glycerin and simple syrup, of each 2 ounces. The dose of this mixture for an adult is a teaspoonful every three hours."

Phosphoric Acid. Paul Claisse[2] reports two cases of invasion of the vertebral articulations by the gonococcus, following *gonorrheal arthritis* of other joints. The spine in this affection becomes immovable, and the head sinks forward, owing to the marked posterior curvature. By placing the patient in bed and giving the phosphoric acid treatment, great improvement was obtained, and the patient was able to return to his work, although ankylosis of some of the vertebræ remained.

Picric Acid. Picric acid has been recommended a number of times for the treatment of *burns*, but for some reason or other it has not become universally accepted. Chrales P. Kindelberger[3] praises the drug so highly that it is certainly worth while giving it a trial. He had occasion to convince himself of the value of picric acid solution in treating 52 patients that were injured by an

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(1) Merck's Archives.
(2) Bull. et mémoir. de la Soc. méd., Feb. 7, 1907.
(3) Military Surg., May, 1907.

explosion, on the Bennington. The usual treatment in each case was as follows: The clothes were removed, the dirt and grease washed off with tincture of green soap and ether and all sloughs and dead skin cut away. Sterile gauze soaked in a 1 per cent. solution of picric acid was applied to the burned surfaces and covered with paraffin paper, cotton and a gauze bandage. Where the burn was on the face, the face was entirely covered with a gauze mask soaked in picric acid solution.

When first applied, the picric acid solution caused pain for ten or fifteen minutes, but after that it had an anesthetic effect, the pain usually diminishing in severity every time the burns were dressed. The property that picric acid has of coagulating albumin is very valuable because it quickly causes a cessation of the oozing and pus formation, prevents dangerous absorption and permits the dry treatment to be commenced in a very short time. At first all wounds were redressed daily, but after a while each patient was given one day's rest in three. One of the disadvantages of the picric acid treatment is that the urine quickly assumes a dark color, due to absorption of the picric acid (carboluria, picric acid being chemically trinitrophenol). The author says that as frequent urinary analysis showed no albumin, the dark color of the urine was not considered a danger signal and was practically disregarded. [We, however, believe that as soon as the urine assumes a decidedly dark color picric acid treatment should be discontinued.—ED.]

The secondary treatment of the burned faces was the greatest problem, as in many instances the face, neck, scalp, ears, lips, and even eyelids were covered finally with a hard, thick crust; the temporary disfigurement was so great in several cases that it was almost impossible to recognize the men. These crusts were lifted wherever loose, all pus expressed and the entire area bathed with peroxid of hydrogen; when dry, they were dusted with a fine powder consisting of aristol one part, boric acid three parts; the lips, eyelids and nostrils were kept greased with 10 per cent. europhen ointment. After finishing with the picric acid solution, the healthy granulating surfaces were gently wiped with sterile cotton every other day, well dusted with the powder previously mentioned, wrapped in thin sheets of lead-foil (silver-foil not being obtainable), and covered with cotton and a bandage. Several patients had to have each finger wrapped separately with foil to prevent adhesion of the raw surfaces, and splints were early applied to wrists and hands to counteract excessive contraction of the scar-tissue. With forceps, at each redressing, as much foil as possible was removed and the rest left *in situ* to come away when complete healing took place.

The author states it as his conclusion that picric acid solution should be the local treatment in all burns, no matter how severe and extensive, if one wants to get a clean wound, rapid healing, diminished fever and lessened scarring. [The proprietary "Antibrule," which has been popular for many years, is said to be a saturated aqueous solution of picric acid.—Ed.]

Pilocarpin. William J. Robinson,[1] of New York, says that pilocarpin is a most remarkable glandular eliminant, and glandular elimination is one of the most important factors in the successful treatment of *syphilis*. As such it is of value in all secondary manifestations of the disease. There are many cases which become intolerant to the further use of mercury; the system seems supersaturated and continuing the mercury in such cases means injuring the patient. Discontinuing the mercury, giving pilocarpin in the interval enables us to resume the former drug with excellent effect. Pilocarpin should be prescribed alone, either in pills or solution, and should be given in doses of two to eight milligrammes (1/32 to 1/8 gr.), two or three times a day.

Pottassium Chlorate. Koster,[2] of Leyden, advocates the use of potassium chlorate in the treatment of *diseases* of the *cornea* and of the *conjunctiva*. Three per cent. solutions may be freely used in these cases, either by instillation, lotion or as a local bath. To the healthy conjunctiva this causes no pain, but to the inflamed conjunctiva it causes a slight burning sensation. When finely powdered, potassium chlorate causes only a moderate pain and has no injurious effect. It can be applied in all forms of conjunctivitis, but especially in the chronic catarrhal form;

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(1) Med. Record, June 15, 1907.
(2) Bull. med., Bull. général de therap., Jan. 30, 1907.

also where there are phlyctenulæ. A case of superficial marginal keratitis was cured completely in two weeks. This agent acts as a disinfectant and as an astringent.

Potassium Iodid. In reporting a case of actinomycosis Knox[1] tells us that great difference of opinion exists as to the value of iodid of potassium in the treatment of the disease. The important point is to use the drug at a time when there is a chance of eradicating the disease. Cases in the advanced stages of the disease may be benefited by its use, but the possibility of a cure is an extremely remote one. Whether the simple treatment of opening the abscess and draining it would be sufficient for a cure it is impossible to say, but in this case the fact remains that the patient did not begin to improve until she was thoroughly under the influence of the drug. The action of the iodid in this disease is unknown; possibly by promoting absorption of inflammatory products as they are formed it may check the spread of the disease. So far as known, it can have no specific action on the organism of actinomycosis. Iodids are largely used in the treatment of this disease in veterinary practice, and many cures have resulted.

The evidence in Knox's case strongly points to infection of the tissues by way of the faulty teeth. The question then arises, How is the parasite conveyed to the patient? The generally accepted theory is that the parasite is carried on straw or grain to the subject in one of many ways, and without doubt cases are on record where this has been so, but there are many cases in which the method of infection remains a mystery. In two other cases which the author has had under his care the teeth had been faulty, and both patients had suffered from alveolar abscesses and glandular suppurations earlier in their lives. Cases are recorded where the disease has been communicated by direct inoculation from one individual to another. In another case of the author, an extensive skin lesion arose late in the history by the opening of an abscess connected with the pleura, illustrating a feature of the disease which is noteworthy, namely, the tendency of the disease to work from within outward. This tendency was particularly noticeable in the case which forms the subject

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(1) Lancet, Nov. 3, 1906.

of this paper. The abscess pointed outward and opened on the skin surface. Contrary to the usual method of treatment in abscesses about the mouth it was encouraged to open outward, as the danger of infection of the alimentary canal was recognized if the discharge found its way into the mouth and the stomach.

As a Prophylactic in Eclampsia. O. Gutbrod[1] reports the case of a patient, a iv-para, with a history of eclampsia at every childbirth except the third. The absence of eclampsia at the third delivery is ascribed by Gutbrod to his prophylactic administration of potassium iodid. The course of the pregnancy and delivery was normal under the influence of this drug with rest in bed at the periods at which menstruation would have occurred in the absence of pregnancy. As the course of the childbirth was so smooth, the family assumed that the fourth pregnancy would have an equally favorable natural outcome and omitted the potassium iodid and rest. Severe eclampsia developed at the seventh month, requiring artificial delivery, and amaurosis persisted for several days. The case is reported as unusually convincing testimony to the value of potassium iodid in the prophylaxis of eclampsia. The drug permeates the tissues of both mother and fetus and acts on the toxin causing the eclampsia, while it stimulates the secretion of urine and strengthens the heart. Gutbrod makes a practice of giving potassium iodid in every case of abortion to promote absorption of any infarcts that may form in the uterus. He also gives it when the fetus had been delivered putrefied in previous pregnancies or the afterbirth had been unduly retained. His experience now includes 120 patients for whom he has ordered potassium iodid regularly from the beginning of pregnancy. The ordinary dose never caused any disturbances in mother or child. The results have been so universally good that he is tempted to give it systematically in all pregnancies, not merely in the pathologic, as a means of aiding the maternal organism during the stress of childbearing, at least during the last two months, and of averting any possible tendency to eclampsia. He mentions as another argument Caspari's

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(1) Monatschr. f. Geb. v. Gynäkol., xxiv, No. 5, abst. in Jour. Am. Med. Assoc., Jan. 26, 1907.

favorable experience with potassium iodid in chronic and acute nephritis.

In Incipient Cataract. Bourgeois[1] recommends potassium iodid in solutions of 2.5 per cent. as a local bath to the eye by means of an eyecup, with the lids partially opened, for a period of one or two minutes at a time. It is stated that this is useful only against cases of incipient cataract. The treatment should be instituted as soon as the patient finds his vision failing, and when ophthalmoscopic examination shows that calcification has not far advanced and is just beginning.

In Ophthalmic Surgery. Dor[2] for the past five years has given iodid of potassium in doses of 15 grains thrice daily for three days before operation, and within this time has operated on numerous complicated cases without the slightest accident. He relates the case of a double cataract in a man, aged 70, who had, in addition, purulent cystitis, prostatitis and perineal fistulæ. The right eye had been lost through operation. Dor gave his usual prophylactic, and operated on the patient in a garret lighted only by means of a bull's-eye lamp and in an atmosphere impregnated with the odor of decomposing urine. The result was good.

Contraindicated in Advanced Phthisis. H. R. M. Landis[3] says that inasmuch as it is apparent that an incipient or quiescent lesion may be aroused into activity by the use of potassium iodid, it would seem that the use of this drug in the more advanced stages of tuberculosis might be productive of harm rather than good. As iodid of potassium fulfills no distinct indication in the treatment of tuberculosis and there is reasonable evidence as to its dangers, the safer course would be to avoid it altogether. When, however, tuberculosis and syphilis coexist, iodid of potassium is often necessary, and under these circumstances may be given.

In Cancer. M. P. Mikhailof[4] considers two practical problems: First, the use of potassium iodid for the rapid diagnosis of cancer from tertiary syphilis, and, second, the

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(1) Rev. de méd et de chir., Aug. 10, 1906.

(2) L'Ophthalm. provinciale, December, 1906.

(3) Therap. Gaz., April 15, 1907, abst. in Jour. Am. Med. Assoc., June 8, 1907.

(4) Roussky Vratch.

use of the same drug in the treatment of cancer of internal organs. The first question he solves by giving from one to three enemas, containing a dram of potassium iodid, half a dram of sodium carbonate, and about three ounces of water in each. These are preceded by a cleaning enema used an hour previously. If the temperature of the patient rises after the injection, he has cancer. In syphilis the temperature remains normal or becomes subnormal. Iodin poisoning is very rarely seen with this method. The second problem concerns the method and dose to be used in treating cancer with potassium iodid. The author notes that within the past five years he has been able materially to assist fifteen patients with cancer of the esophagus by the use of potassium iodid. These patients were aided in swallowing by this simple treatment after they had been told that they must be operated on. The larger the tumors and the softer their structure, the more marked was the reaction to potassium iodid. The mode of administration was the same as in the diagnostic method just mentioned, *i. e.*, by enema.

Potassium Permanganate. Schadel speaks well of the use of potassium permanganate as a *hemostatic* which was recommended recently by Vorner. The remedy was first applied in powder form mixed with charcoal in the proportion of three to one; but it was later found more convenient to use it in the shape of a paste. This may advantageously be prepared by the addition of about 4 per cent. of vaselin. It has been used with good success in all forms of parenchymatous hemorrhage such as follows the excision of condylomata, warts, etc. It has also been found of value in nasal hemorrhage and in lupus. The hemostatic is applied by carefully drying the spot in question and then pressing some of the paste directly onto the bleeding surface. Slight burning is caused, but the sensation is not very painful.

Psychotherapy. L. D. Mason[1] urges that physicians recognize that "there is an intangible, impressionable, sensitive, immaterial nature, influenced by material conditions and environments, and that we can depress or elevate them according to our relations to the patient." This will give

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(1) Jour. Am. Med. Assoc., Feb. 23, 1907.

success in certain classes of mental cases. Orthodox medicine has in the last few years recognized that there is a class of mental disease in which the will power and the mental condition can be greatly influenced and often cured by mental suggestion and various psychic influences. We cannot divorce the psychic from the physical. The study of mankind is man, but we have studied him from the physical, not from the psychic side. Behind the veil of flesh is the real man himself; the sentient, emotional, controlling master of the body. He argues that the reformation of drunkards is wholly due to psychic influences, that all so-called "cures" depend on their mental influence. They act by affecting the patient's psychic centers and calling out his latent will power. The whole process is to him a "dark séance" over which the glamor of mystery is spread, the potent influence being concealed in the infallible, precious, and mysterious drug. The "infallible cure" promoter acts along psychic lines, using the "cure" as a blind and various measures as decoys to attain his end, meanwhile concealing his ultimate purpose.

Pyramidon. Leick states that during the last four years he has treated 113 patients with *typhoid fever*, including some very severe types, with eleven deaths. Of these eleven one patient died on the first day, two on the second, one on the fourth and one on the fifth day after coming under observation, and therefore should, in his opinion, not be taken into account in the consideration of the treatment adopted. If these five cases are deducted there remain 108 cases of typhoid fever treated with pyramidon, with only six deaths, a very favorable result.

Pyrenol. M. Steiner writes from the Ducal Hospital and Sanitarium at Altenburg that a remedy for *influenza* must meet three requirements: 1, It must effect subjective improvement, *i. e.*, depress temperature and relieve pains; 2, it must be innocuous; 3, it must as far as possible prevent complications. He applies these tests to pyrenol, which has lately been recommended for influenza in about thirty publications. Steiner's observations with pyrenol began in 1903, were especially numerous in the epidemic of 1904-5, and were confirmed in the autumn of 1905 and 1906. He has records of 86 cases treated with pyrenol and 20 control cases which got other treatment.

Patients in the prodromal stage of influenza took 15 gr. pyrenol thrice daily, or 7½ gr. six times daily. When the patient could not swallow tablets, 5 per cent. solution was given. If symptoms were already well developed and severe, the dose was 15 gr. four times daily or half the dose every three hours, given until the first signs of improvement occurred, and then reduced to 45 gr. daily, and continued till patient got out of bed. Cardiac lesions, nephritis or liver trouble were no contraindications.

The third test of pyrenol is the absence of complications. Of the patients seen in the prodromal stage, the great majority remained under treatment only for from a few days to a week; and not one developed pneumonia. In almost all pyrenol was the only treatment required. In the first two days large hot compresses were applied for two hours twice daily to the trunk to promote diaphoresis, and pyrenol seemed to do especially well under this treatment. Vigorous rubbing of the body after the sweating seemed to put the patient in good condition for some hours.

Of the patients seen only when the malady was already advanced, pneumonia was positively diagnosed in eight. The dose of pyrenol was usually increased by 15 gr. daily, to control fever and pain more rapidly. There was not a single death. As temperature and pulse were kept in moderate bounds, the subjective symptoms were bearable and the course of the disease was very favorably modified. Cough during the febrile stage was treated exclusively with pyrenol.

Pyrenol was very helpful in the influenza of children. In young subjects almost all antipyretics, even in small doses, are apt to depress the temperature to subnormal, with collapse lasting perhaps for hours. Children from six months to eight years got, in accordance with age, one or two teaspoonfuls of a 2 to 4 per cent. pyrenol solution in raspberry syrup, three or four times a day. Its antifebrile action lasted longer in children than in adults, so less frequent administrations were necessary.

Quassia. In the treatment of *gastric hyposthenia,* the simple bitters, as pointed out by Reichman, stimulate not only the gastric secretions but also the pancreatic secretion.

G. Bardet[1] places quassia amara at the head of the list. The medicinal virtues exist in the wood, which is supplied in the form of shavings or raspings. These are subjected to maceration with water, and the cold infusion is to be taken a quarter of an hour before each meal (10 grams of quassia to a quart of cold water, of which half a glassful is taken at a dose). Its extreme bitterness is due to a glucosid, quassin ($C_{32}H_{42}O_{10}$), which has been isolated by Adrian and Moreau. Quassin is found in commerce in the form of crystalline granules of which the dose in tablets or pills is 2 milligrams (gr. 1/32). Amorphous quassin is also supplied in pills; it is less active and is given in doses of 25 milligrams three or four times a day. Administered in granules or in capsules it has no action on taste, and on this account it is preferred to the very bitter infusion, but it acts directly as an excitant on the gastric mucosa. It very notably stimulates the smooth fibers of the stomach and intestine, exercising on the latter a slight laxative effect. Quassia is an excellent remedy in hyposthenic conditions. Where it has failed it is because it has been thoughtlessly given to subjects of hypersthenia of the stomach, in which it may produce disastrous effects. As a bitter tonic, gentian is inferior to quassia. With regard to alcoholic bitters, which are popular as "appetizers," they should be rigorously excluded from the pharmacopeia, because the frequent contact of alcohol with the empty stomach is deplorable in its consequences, especially in persons suffering with gastric insufficiency. If occasionally certain alcoholic preparations are permitted at the table, it should be at the end of the meal, and under the form of cordials. The latter, however, are less esteemed than recent decoctions or infusions (tisanes), made with flowers of wormwood, artemisia; or chamomile, or leaves of mint, balm, or orange, bark of cascarilla, or bitter orange, such infusions well sweetened and taken hot some hours after a meal exercise a very appreciable stimulating action on the digestive organs. They render the best service if administered at the time when the patient commences to feel oppression in the stomach.

Quinin. The summary and conclusions of Eugene F.

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(1) Bull. général de therap., March 30, 1907.

McCampbell's[2] article on quinin in *tetanus* are as follows:

1. Solutions of the official salts of quinin have a feebly antiseptic action on the spores of tetanus, the hydrochlorate being the most antiseptic. Obviously the antiseptic action depends on the concentration of the solution. Saturated solutions do not disinfect.

2. The lethal dose of neutral hydrochlorate of quinin is from 1/3,500 to 1/4,000 the weight of the guinea-pig and from 1/4,500 to 1/5,000 the weight of the rabbit. The dose varies with the age of the animal, young animals being more susceptible than older ones.

3. Hydrochlorate of quinin has the power of causing a paralysis which persists for various lengths of time in the experimental animals. This action is due, I think, to its coagulating action on the protoplasm of the peripheral nerves. Atrophy of the extremities results after large doses.

4. In cases of tetanus in experimental animals, which have been injected with hydrochlorate of quinin, the disease resulted only in those cases in which there was a mixed infection. The quinin may have acted indirectly since its corrosive action at the point of inoculation would make secondary infection more liable. It is possible that the quinin may act as an additional irritant to the nervous system in cases of tetanus or may bring about such changes in the protoplasm of the nerve cells and fibers that they are more easily acted on by the tetanus toxin than normally. In these particulars, however, any mild corrosive substance would serve the same purpose.

5. In cases in which tetanus does not result after injections and there is no secondary infection, the spores have evidently undergone phagocytosis by the leucocytes or tissue cells as none of them are ever found.

6. Hydrochlorate of quinin has not the power of favoring an infection of tetanus except in the indirect manner mentioned in paragraph 4. It has not the power of awakening an infection when injected at the same time or at other times than that at which the tetanus spores are injected.

7. Hydrochlorate of quinin produces a slight leuco-

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(1) Jour. Am. Med. Assoc., March 16, 1907.

cytosis and slight paralyzing effect on the leucocytes. Should this paralysis be so extensive as to involve the majority of the leucocytes in the body, it is possible that the spores of tetanus might develop unhindered as is the case when lactic acid is injected. If quinin of such strength was injected in sufficient amounts, however, to act on the majority of the leucocytes the toxic effects of the quinin would be evident at once and death of the animal would probably result.

The author thinks that the majority of cases in which tetanus has resulted after hypodermic injections of quinin, can be traced to some fault in the surgical technic or to the contamination of the solution of quinin. Quinin possesses a corrosive action and the necrosis of tissue resulting in some cases would undoubtedly favor an infection by the bacillus of tetanus as well as by other bacteria. As to the statement that the transference of the spores of tetanus takes place from point to point according to where the quinin is injected, he does not think that there is at present sufficient proof. Nor does he think it possible for the healthy live spores of tetanus to be present in the body and to develop a severe and fatal infection on the advent of an injection of hydrochlorate of quinin.

In the *Journal of the American Medical Association*, Dec. 9, 1905, he published an inquiry asking if any practitioner had ever seen a case of tetanus resulting from a hypodermic injection of quinin. A few answers were received from various physicians but no cases reported were exactly in point. In one case there was good evidence of poor surgical technic in the sterilization of the syringe and the skin. In another case tetanus is reported as following the injection of aromatic sulphuric acid and quinin sulphate. No cases were reported in which the hydrochlorate was used and tetanus resulted except the one referred to above as giving evidence of poor technic and in this case there was evidence of several other slight abrasions on the patient which might have served as avenues of infection. Evidently in this country tetanus does not result after hypodermic injections of quinin, although it is possible it may in other countries.

As An Oxytocic. Differences of opinion have long existed among obstetricians in regard to the value of quinin as an oxytocic, and while some observers have lauded it as a useful uterine stimulant others have considered it either of no value for this purpose or at best unreliable in its action. A comprehensive summary of these conflicting views is presented by Mäurer,[1] who also reports his own experiences with the drug. He administered it in sixty-three cases during labor and fifteen times in the treatment of abortion. In 78.2 per cent. of the cases he considers that an effect was produced which was the result of the medication and in the remaining 21.8 per cent. it appeared to be without efficacy. His experience leads Mäurer to believe that quinin undoubtedly strengthens the uterine contractions and perhaps may induce their onset, but that it shares with other oxytocics the disadvantages that its effects cannot be guaranteed in every case. According to Mäurer's experience its administration is not attended by any untoward action on either the mother or child, and the uterine contractions evoked are physiologic in character. In explaining its mode of action he assumes that, granted a normal uterine musculature, in cases of inadequate contractions, there is a lessened susceptibility of the muscle to stimuli and the quinin serves to increase the irritability of the organ to the nervous impulses in question. It was found that the nature of the quinin preparation is of no importance and that it may be given either by mouth or hypodermatically. Mäurer's routine method is to give one gram of the sulphate by mouth and if no effect is manifest at the expiration of an hour to give 0.5 gram more. If there is still no improvement in the conditions this dose is repeated in half an hour, but if this is ineffectual the patient is regarded as having an idiosyncrasy that renders her insusceptible to the influence of the quinin.

In Influenza. Broadbent[2] tells us that from the time of the first invasion of influenza he has found that the best remedy was quinin. His usual prescription is one dram of ammoniated quinin and two drams of liquor ammonii acetatis every hour for three hours, and then every four hours. In the fulminating attacks of influenza, in which the patient has become comatose, hydrobromate of

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(1) Deutsche med. Woch., Jan. 31, 1907.
(2) Practitioner, January, 1907.

quinin, given hypodermically in large doses, has completely relieved the unconsciousness.

As a prophylactic he early orders two grains of quinin every morning during the prevalence of the epidemic, and the results appear to be good. Of course, patients who are taking quinin do occasionally get influenza, but he has known very many instances in which this dose has made a complete difference in the patient's liability to infection, and even in the general mode of life.

The author has, moreover, had opportunities of obtaining extraordinary evidence of its protective power. In a large public school it was ordered to be taken every morning. Some of the boys in the school were home boarders, and it was found that while the boarders at the school took the quinin in the presence of a master every morning there were scarcely any cases of influenza among them, although the home boarders suffered nearly as much as before.

In a large girls' school near London the same thing was ordered, and the girls and mistresses took their morning dose, but the servants were forgotten. The result was that scarcely any girl or mistress suffered, while the servants were all down with influenza.

Resin Natron. A resinous soap solution, similar to the resin natron employed by the ancient Egyptians for preserving purposes, has been found by Lortet[1] to give excellent results when used as a dressing for ulcerated lupus sores, even of several years' standing, which have resisted other applications. It is composed of sodium chlorid, 4; sodium sulphate, 5; sodium carbonate, 6; dissolved in about 75 parts of water. The solution is boiled, and myrrh, 5; olibanum, 5 and bdellium, 5 are added. The emulsion is shaken up before use and applied on compresses night and morning.

Roentgenology. A physiologic explanation of the action of the Roentgen rays is impossible, according to C. L. Leonard,[2] Philadelphia. It can only be judged by its results, like many other remedial agents. The therapeutic action is apparently dependent on the varying penetrating power as the effect seems to be proportional to the amount absorbed in the diseased area. Thus the most effective rays

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(1) Lyon Méd., 1906.
(2) Jour. Am. Med. Assoc., Jan. 26, 1907.

in treating skin lesions are those of low penetration that are absorbed in the skin; while in treating deep lesions, rays of higher penetrating power must be employed. The effect of the ray varies also with the volume or quantity of rays employed. It may be either stimulating or destructive. The distance of the tube and the length and number of exposures have also to be considered. Leonard has adopted and described a method of measuring and writing the dose employed, that, while not absolutely accurate, is rather practical for clinical purposes and can be written in a seemingly algebraic formula or equation: X (the dose) = 10m., 8″, 2″ g, 2 ma. 8B. This means a ten-minute treatment, with the platinum of the tube eight inches distant from the patient and a vacuum equivalent to two inches of air in a parallel spark gap, with two milliamperes of current in the secondary circuit and a degree of penetration equal to No. 8 of the Benoist scale. Any variation of any one of these factors may modify the effect, and Leonard illustrates the difference by the heroic method required for malignant disease and the mild stimulant and alterative action required in pustular acne. The variations in the technical treatment are as numerous as the diseases treated, and timid handling in malignant disease, for example, may only stimulate instead of destroying it. The Roentgen ray does not supersede surgical measures. Only in superficial malignant disease should it be solely and primarily used, but it is undoubtedly beneficial as an adjunct of surgery, cutting off the lymph circulation and even in hopeless cases rendering surgical intervention also a useful palliative. The dangers can be avoided by due knowledge. The gravest one is the promiscuous use of the remedy without such due knowledge. Instruction should be given in its use by clinical and laboratory courses in medical colleges. The employment of the rays on human beings should be restricted by law to those qualified to practice medicine and dental surgery.

Its Use and Limitation. A. L. Gray,[1] Richmond, Va., calls attention to the lack of conception by the general physician of the possibilities and limitations of the Roentgen rays, and also mentions certain truths which

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(1) The Virginia Med. Monthly, April, 1907.

most of our readers will fully appreciate. He explains the difference between a photograph and a radiograph, showing that the one is a shadow while the other is produced by the passage of rays through a prism, one showing a shadow in a plain surface while the other gives the perspective as well. He also calls attention to the fact that for diagnosis it is important as well that the physician intelligently read the radiograph as properly expose and develop the same. Surgeons often fail in this particular for want of experience in reading the radiograph. No one who is not familiar with the character of the radiograph and studies it in two planes can come to correct conclusions as to the correct relation of the fragments as of the fractures of long bones. He calls attention also to the fact that the *x*-ray finding may be only one link in a chain of signs and symptoms which would alone be of no value but along with others makes a clean clinical picture. He discourages the making of prints for patients to show to friends, as it is a source of advertising that is not free from its dangers both for the surgeon in charge as well as the radiographer.

In Pneumonia. Edsall and Pemberton[1] report the history of five patients who were treated with Roentgen rays for unresolved pneumonia with most excellent results. The authors state first that no results can be expected unless the duration of the condition has been reasonably short—a few weeks at most—for if organization has occurred a satisfactory result of treatment is almost inconceivable. Second, the condition should be chiefly a real lack of resolution and not a continued inflammation of the lung. Third, it is exceedingly important to determine, so far as possible, that one is actually dealing with unresolved pneumonia and not with tuberculosis. The treatment should be begun tentatively and with brief exposures and small doses until it is determined in the individual case that serious results are not likely to ensue.

In Tubercular Adenitis. The results of twelve cases of tubercular adenitis, treated by Roentgen rays, are reported by Barjon,[2] who found the principal effect on the general infiltration which so often accompanies scrofula, uniting

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(1) Am. Jour. Med. Sci., February, 1907.
(2) Lyon Méd., No. 41, 1906.

the lymph glands in a solid mass. The glands become separated soon after beginning the applications, and later disappear. If there is any tendency to softening the rays hasten this, and the abscess soon requires to be opened. The rays continue to have a good effect on the suppurating tissues. No bad effects or tendency to cause metastasis were noted.

In Neuralgia. G. Haret[1] remarks that facial or epileptiform neuralgia is an affection most difficult to relieve. The various forms of drugs recognized as at all efficacious afford amelioration for but a short time and finally cease to produce any effect. The most skillful operations produce only a few months respite.

Recalling that radiotherapy had often quieted pain in various patients treated for different troubles, Haret determined to try it on a patient afflicted with facial neuralgia. This patient had ten or a dozen attacks daily, so violent that in spite of many hypodermatics of morphin no relief was obtained. He had undergone several dental and surgical operations, but after each operation had experienced cessation of pain for only a few months, not more than six at the most.

Radiotherapy once a week over the afflicted painful point was employed. No change was noted after the first or second treatment. After the third, there was a decrease of the pain and a complete disappearance of it after the fourth. From that time to the writing, a period of two years, not one crisis of pain had been felt.

All patients, however, do not experience such a simple recovery. In many similar cases treated subsequently it was found necessary to warn the patients that little or no improvement would be noted during the first fifteen days. After the third treatment frequently the patients complained that never in the course of their malady had they suffered so intensely, and many, discouraged, gave up the treatment. Those, however, who persevered found this intensification of their pain only a passing phase and after one or two further treatments it wholly disappeared. Only one case failed absolutely to yield to this remedy. It is then always necessary to warn the patients of the

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(1) Presse Méd., March, 1907.

probable increase of pain as a passing phase on his way to recovery, and to prevent, if possible, his discouragement causing him to stop short of the complete cure.

As to the cause of this exaggeration of the painful sensations it would seem due to an edema of the tissue which surrounds and compresses the nerve fibers. In fact, an edema unexpectedly appears at the seat of those irradiated areas in patients treated for other disorders. This has been the case among patients treated for cervical adenopathy. The measurement of the break showed a marked increase in the beginning of the treatment after each application. Haret suggests the following conclusions:

1. In the treatment of facial neuralgia radiotherapy is of the greatest value in as much as it produces more remarkable cures and of longer duration than any other means employed.
2. That when internal medicines fail to relieve, before resorting to surgery, this method should be tried for it is always harmless and may be applied accurately to the painful point.
3. In cases where the pains localize at one or more points clearly defined, this means offers the greatest chance of success.
4. The temporary increase of the pain during the first few treatments is a fact so often observed that it should be regarded as an indication of the approaching recovery.

In Dermatology. Russell H. Boggs[1] pleads for a more conservative use of the Roentgen rays in dermatology, and insists that more attention be paid to accurate diagnosis and to the pathology of the disease to be treated and to the quality and quantity of the rays with which the condition is treated. He thinks that anyone must understand these factors to be able to use the rays successfully as a remedial agent. He calls attention to the fact of the difficulty in making skiagraphs without experience and with a new machine, but thinks the operator had better spoil the *x*-ray plates than the patient. Many are able to make an accurate diagnosis but have no idea of the character

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(1) N. Y. Med. Jour., April 27, 1907.

and dosage required in treating the condition already diagnosed. He is grateful to note that the dermatologists are becoming better recognized, while the x-ray operators are becoming better clinicians. He thinks this will work for the good of both, and that no dermatologist will deny the effect of x-rays in the treatment of acne. Neither should the x-ray operator deny that all predisposing causes should be removed.

Of eczema he gives a graphic description of the various forms, touches on the pathology, and in connection calls attention to the difference in treatment of the various conditions. He decides that the rationale of the Roentgen treatment lies in its stimulation of the metabolic processes, especially in chronic inflammations,—stimulating the bioactivity of the cells. He does not consider that the rays are ordinarily indicated in acute or subacute eczema, unless it be to remove a severe pruritus, but in the chronic and rebellious cases, which resist other therapeutic agents, the rays have proved efficient. In squamous eczema he considers it most beneficial, as it is usually of a very chronic variety. It requires, sometimes, intense radiation to relieve the pruritus and it is prone to recur. He thinks radiation in eczema of the legs should be applied very differently from the ordinary treatment of squamous eczema. It improves the nutrition in these cases and adds materially to the successful termination. He reports two cases which are very interesting, and a cure is reported in both. He considers that only the very severe and obstinate cases of acne should be treated with the rays.

The reports on psoriasis have been very conflicting. One author claims if results are not obtained after two or three exposures, he advises that the rays should be stopped and ordinary methods instituted, while another thinks, as a rule, no results are permanent without an intense use of the rays. The report of the first shows that he knows very little about radiotherapy, for it is known that it takes intense action to produce positive results in psoriasis, and that it is then very liable to recur, but the results have been sufficient to demonstrate its usefulness and it should be persisted in with sufficient dosage to master the trouble.

In keloid, he considers it the most successful agent known at the present time. It requires considerable time to remove the keloid and the rays should be used of such character as to stimulate the normal tissue processes and promote absorption. He does not think, under ordinary conditions, that a keloid should be removed by operation and then treated with the rays, as the knife is very liable to stimulate the activity of the growth.

He describes cutaneous tuberculosis as follows. He describes several forms of the disease, namely: (1) Lupus vulgaris, (2) tuberculosis, (3) tuberculosis cutis orificialis, and (4) scrofuloderma. He deals quite extensively and minutely with the pathology of these four different types, also, giving minute details of difference between the four varieties. He thinks that in tuberculosis verrucosa it is often advisable to remove the growth by electrolysis or the knife and then follow with a few intense radiations to destroy the remaining foci. In lupus, he thinks the *x*-rays are a recognized method of treatment, but must be varied to meet different cases. There are usually two methods of doing it, one by producing a gradual effect and the other by setting up an intense reaction followed by necrosis of the skin. The first is usually preferable. The amount of reaction set up will vary with the disease under treatment. Ordinarily it is useless to produce more than a hyperemia. A slight swelling of the tissue is always more pronounced in the lupus nodule and is accompanied with a certain amount of burning and itching. The congestion is allowed to pass away in a few days when the nodules are decreased in size and the ulcerated portions will cicatrize. This is repeated from time to time when the disease is cured.

Action on the Ovary and Testicle. Ancel and Bouin[1] state that the local action of *x*-rays on the testicle causes a disappearance of the external and seminal secretion with preservation of the internal interstitial secretion and that on the ovary they cause a disappearance of both the external and internal secretion. The results, therefore, of the *x*-rays on the testicle are the destruction of the procreative power with preservation of the genital activity and the sexual characteristics, while on the ovary the results are sterility and the appearance of all symptoms which follow castration.

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(1) N. Y. Med. Jour., May 4, 1907.

Action On the Course of Pregnancy. Hippel and Pagenstecher[1] review the literature of this subject which has now become quite large and also describe the results of some experimental observations of their own. They found on exposing pregnant rabbits to the x-rays that three sessions of fifteen minutes each were usually sufficient to destroy entirely or in great part the product of conception, but that individual variations in susceptibility in this respect were very great. It was also found that on covering the abdomen of the animal subjected to the action of the rays with a lead plate, the destruction of the embryos took place just about as when the rays were allowed to impinge directly on the unprotected abdomen. Fourteen animals were given injections of cholin; in ten of these sterility resulted, and in two others some of the embryos were destroyed. Only two of the animals were delivered normally, and both of these had received only small amounts of the substance. The authors state that apparently a daily injection of 10 c.c. of a one per cent. solution of cholin given for eight days, beginning with the sixth or seventh day after impregnation, almost always prevents the progress of the pregnancy. This result may also be obtained, however, even if the treatment is not given until much later. They consider it likely that the action of the x-rays produces in the body some toxic substance similar to cholin or to the derivative of the latter formed in the body which passes from the maternal body to that of the embryo and destroys the vitality of the latter's cells. The dead embryo then undergoes absorption and the changes in the uterine wall attending the pregnancy gradually retrograde. Cholin itself, if pure, appears to have no toxic effect on the maternal animal in the doses employed.

In Leucemia. J. Belot,[2] in a paper entitled "Roentgen Rays and the Affections of the Hematopoietic Organs," read at the Lyon Medical Congress, expressed his conviction that "a physician who deprives a leucemic patient of this method of treatment commits as grave a fault as one who

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(1) Münchener med. Woch., March 5, 1907.
(2) La Tribune méd., Aug. 11, 1906.

should neglect to give mercury to a syphilitic." It was in 1903 that Senn, of Chicago, published the first clinical report of a leucemic patient, whose condition had been very greatly ameliorated by radiotherapy. Experiments made by Heineke, of Leipzig, have recently thrown light upon the action of the Roentgen rays on hematopoietic organs. As stated by Becterc, "the lymphocytes, profoundly hidden in the interior of the visceral organs, when confronted by the Roentgen rays, show themselves to be much more sensitive to this agent than the cellular elements of the skin; the reaction being more rapid, since the period of latency which is so characteristic of radiodermatitis, is here suppressed." Of all the affections of the hematopoietic organs, declares Belot, the most favorably influenced by Roentgen rays is chronic leucemia. Without being absolutely identical, the results obtained in myeloid and in lymphatic leucemia are of the same order. The modifications produced occur simultaneously in the blood, the spleen, in adenopathies when they exist, and their influence is shown on the general condition. The action on the blood is very striking: Under the influence of a well directed treatment the white globules progressively are reduced to the normal. The number of polynuclears gradually surpasses that of the pathologic forms. In myelogenic leucemia the effect is most intense on the myelocytes; and in lymphoid leucemia, on the lymphocytes. At the same time that the white globules are decreased, the red are increased, as had been observed by Senn. The increase in number is accompanied by increase in hemoglobin, and also in their specific gravity. The greatly enlarged spleen is reduced to the normal by radiotherapy. "It is frequently seen that a spleen filling one-half of the abdomen, from the diaphragm to the pubes and Poupart's ligament, and going 10 to 12 cm. beyond the umbilicus, will resume an almost normal volume in the space of three months." Lymphatic gland tumors are also promptly reduced. As regards the general condition, one of the most curious effects of radiotherapy is the suppression of fever when it exists. It is the same with night-sweats, and the state of apathy and of anorexia. Within ten to fifteen days from the commencement of treatment, the most cachectic leucemics show a better color, their appetite improves, dyspnea becomes less, pains disappear, sleep becomes possible, and strength returns. Albuminuria, when it exists, disappears quite rapidly. Edema lasts longer, but finally also disappears, as the hypertrophied organs become normal. The increase of appetite is accompanied by increase in weight. It may be said that the Roentgen rays constitute a specific treatment for cases of leucemia; the myeloid variety being more amenable to this treatment than the lymphoid. In pseudoleucemia, the results are variable. In splenomegaly and anemia there is little or no action. In polyadenitis the results are very diverse and incomplete. Those with lymphoma appear to be most favorably influenced. Recent cases are more amenable to treatment than older ones. In conclusion, he recommends a routine examination of the blood of all patients, just as the urine is examined, so that leucemics can be subjected to radiotherapy at the very beginning of their affection.

In Bronchial Affections. Accidentally the favorable influence of *x*-rays on bronchitis and bronchial asthma has been noticed by Schilling. Accordingly he treated a series of cases with this method and has obtained good results. Roentgen rays are applied especially to the region where the râles are most pronounced. He thinks that the good results obtained were not due to the bactericidal action of the rays, but rather to their effect on the cells of the bronchial mucous membrane. As to the technic, each patient was treated with the rays at one sitting only. It is advisable that the patient should be sitting down while treated, and the rays are applied from all sides, avoiding, however, the thick layers of muscle. The duration of the application was from 5 to 7½ minutes at a distance of 15 cm. (6 inches) from the skin.

In Rhinoscleroma. After a brief allusion to the nature of the disease and its geographical distribution, M. J. Ballin[1] relates one personal case occurring in a Russian woman of fifty-three years. Photographs are shown in the paper by which the progress of the case can be noted. The noteworthy features of the case are: First, its long duration, viz., sixteen years; second, the complete freedom of the larynx; third, the extremely large size of the nasal

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(1) N. Y. Med. Jour., March 16, 1907.

organ, and fourth, the surprisingly good effect of the *x*-ray in treatment. At the time of the report the case was not absolutely cured, but a vast improvement had been made, although there was some obstruction inside the nares. Removal of pieces of affected tissue to allow of a greater air space are generally followed by increased activity of the pathologic process. It is hoped by the author that the use of very small tubes for the *x*-ray within the nose will result in a full restoration of their patency, or at least lead to satisfactory cicatrization. It is thought that the reduction of size of the nose has been due not to a breaking down of the tissue, but to a gradual absorption brought about by some chemical change.

In Joint Affections. Among the cases reported by Moser[1] is that of a man of 52 who, since the age of 24 had suffered from pains and stiffness in the hip, probably the relics of an osteomyelitic process in the neck of the femur. He had tried all kinds of treatment—baths, massage, electricity, Swedish movements—but without results, the latter measures even increasing the pain. He walked with a cane, limping very much. Under Roentgen treatment the joint became less painful and he could use it with greater ease. The improvement continued progressively after suspension of the Roentgen exposures. About a dozen exposures of from five to ten minutes each were made in the course of three or four months, with a hard tube, at a distance of from 15 to 30 cm. (6 to 12 in.). After each exposure the patient lay down for a time. No benefit from Roentgen treatment was obtained in the case of deforming arthritis, and in another case the exposures induced pain in a previously painless joint. The joints did not regain normal mobility in any instance, but it is a great gain to a patient to be able to raise the hand even to the head, when previously it could not be raised more than a few inches, or to be able to sit down and get up with ease instead of the act being accompanied by great pain and only accomplished with difficulty as before the treatment in one of the cases.

In Examining the Cranial Bones. C. Luraschi[2] began in 1904 a study of the results to diagnosis and prognosis

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(1) Mittell. a. d. Grenzgeb. der Med. u. Chir.
(2) Giornale di Elettric. Med., September and October, 1906.

of the application of the x-ray to the bones of the skull. He finds that it is of value in locating disease of the various sinuses, as the frontal, mastoid, and the antrum, and in detecting tumors of the brain. The rays are of more value in the examination of thin bones, such as those of children. It is possible to distinguish the layers of skin, skull, and dura mater by photography. By radiography one can distinguish the thickness of various parts of bones, and localize foreign bodies, such as projectiles. They are of the greatest use to the rhinologist and the dentist.

In Diagnosis of Heart Block. Deneke[1] describes a case of Adams-Stokes disease, and also a congenital heart defect—a single ventricle and two auricles—with postmortem findings in each case. In the first the disturbed coördination between the auricle and the ventricle was rendered visible by Roentgenoscopy, as also the peculiarities of the contractions of the ventricles and auricles under these conditions. The diagnosis of heart block was clear and its mechanism was shown unmistakably in this way.

In Malignant Disease. E. G. Williams,[2] Richmond, Va., thinks that we are still only in the pioneer stage in the discovery of the possibilities of the Roentgen rays in the treatment of disease. The variation in results reported should be no discouragement. We have to consider the variability of the various factors in the production of the ray, in its method of application, in the penetration and effective energy of the rays from different sources and the different nature and locations of the growths treated. The lack of a unit or standard to use in applying the ray is another difficulty which he has met approximately by the use of the electric units of current in the tube circuit. To a certain extent also the physiologic efficiency of the ray is proportional to the energy given off from the tube, but it depends more on the degree than on the total quantity, on the principle that one strong blow is more effective than a series of lighter ones, though the total amount of energy may be the same. This seems to him to be true, notwithstanding the fact that the action of the ray is to a large extent cumulative, i. e., the effect of one treatment persists over many days and subsequent exposures during this time

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(1) Deutsch. Archiv f. klin. Med.
(2) Jour. Am. Med. Assoc., Jan. 26, 1907.

are superadded. The physiologic efficiency is estimated by observation and study of the tissues exposed. The rays seem to have no effect on dead organized matter, and if we know the nature of the difference between the living and the dead we could probably explain the action of the rays. Williams suggests the possibility of a close relation between the vibration period of the rays and that of atomic or subatomic activities that constitute the vital principle in protoplasm. It is the cells, and these in proportion as they exhibit the manifestations of life, that are principally acted on by the rays, and this explains the selective action on malignant growths, especially carcinomas, that have the largest proportion of vitally-active cells. In the treatment of tumors, therefore, the result depends on their constituent cell tissues and their accessibility to the proper quality of radiant energy. Hence the adaptability of the rays for superficial malignant growths, while for deeper ones excision is indicated, followed, of course, by sufficient exposures to the rays to destroy malignant cells that may be left. Excision should also be practiced, in his opinion, with cancer of the lips or of any mucous membrane, as he has found such for some reason especially resistant to the rays.

In Rhinology. W. G. B. Harland and H. K. Pancoast[1] call attention to the value of skiagraphy in giving definite ideas of the shape, size, and location of the accessory sinuses, and in indicating the presence or absence of pathologic conditions in rhinology. By the x-ray picture the condition of the frontal sinuses as shown by the skiagraph will reveal the presence of sounds, rudimentary conditions, and an estimate of the depth and extent of the sinuses—matters of considerable importance in operable cases. Investigation concerning pathologic changes will discover by the comparison of the other side presence of thickened mucosa or pus, or both. The presence of pus can be easily diagnosed from the blurred condition or darkening of the affected side.

"A clear, clean-cut picture of a sinus affords good evidence of its freedom from serious diseases, and in a number of cases we were able by this means to exclude with

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(1) Penn. Med. Jour., April, 1907.

certainty the presence of involvement in cases referred for an opinion as to the possibility of accessory sinus disease. In other cases in which a number of cells were diseased, we were enabled to learn which sinuses had escaped infection."

"Although probably more definite information can be obtained from the x-ray pictures than from the lights and shadows of transillumination, this method is nevertheless open to some of the sources of error that detract from the value of transillumination, for pictures will be influenced by such factors as thickness of bone, etc. Another difficulty is the fact that cells and sinuses overlie one another in the picture, and this also must be allowed for in studying the skiagraphs." Errors also arise from faulty development and it is therefore best in the judgment of the writers that the skiagraph be employed in connection with the examination by other possible means.

Technic: The secret of success in this work lies in the development of a high vacuum tube and a diaphragm with plenty of current and short exposure; also much depends upon careful development of the plate. For lateral views the plate is held on the diseased side of the head. For anterior-posterior views the plate is held in front and close to the face, the patient lying on the abdomen. The clothing is removed from the neck and the tube is held below the occipital protuberance.

Radium. A. N. Dinger[1] has been induced to test the therapeutic effect of radium in *trachoma*, after Cohn published his good results. The author used 5 mg. of radium bromid, enclosed in a glass capsule of about 2 mm. diameter, which was attached to a vulcanite pencil of about 10 cm. length. The trachoma nodules, especially in the fold of the upper lid, were exposed to this illumination. At first he tried an exposure of one minute's duration, repeated twice a week; then he tried two minutes, and so on till he reached five minutes. When the nodules were exposed to the radium rays thrice a week for five minutes, a distinct diminution was noticed. Prolonged observations show that no deleterious effects of the treatment followed this dosage, some cases being watched for six months. It has been found that 20 mg. of radium bromid brought

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(1) Berlin klin. Woch., xliii, 40.

into proximity with a rabbit's eye for from three to six hours destroyed the organ; but this dosage is vastly greater than the highest employed on man. A table of the cases shows that of 16 patients, 7 were cured. The younger the patient, the quicker and more complete the result appears. In old-standing cases, complicated with pannus, the healing goes on very slowly, but both the nodules and the pannus ultimately disappear. The treatment is preferable to the caustic treatment or to the mechanical treatment, since it is not only quicker, but is also quite painless. Many of the patients broke off the treatment as soon as an improvement had set in, so that the number of cures appears rather small.

Salicylates. There is hardly any drug about which more diametrically opposite opinions are held than about the salicylates. In a paper recently read at the Hunterian Society, by David Lees, the author classed the salicylates among our most certain remedies. He claimed that sodium salicylate was as directly antagonistic to *acute rheumatism* as mercury is to syphilis, or quinin to malaria. The failures of the drug Dr. Lees ascribed to insufficient doses. He said that it is decidedly too often given in too small doses on account of the unpleasant symptoms which it sometimes produces and on account of the general opinion that it is a cardiac depressant. He considered the disagreeable symptoms of little importance and where vomiting occurred it could be arrested by omitting two or three doses. He always combined sodium salicylate with full doses of sodium bicarbonate. Potassium salts were depressants of the heart, but sodium salts he considered as distinctly cardiac stimulants and likely to diminish the tendency to cardiac dilation in acute rheumatism. He increased the dose every day or every other day up to 450 grains in 24 hours for adults. He had given a boy of fifteen 600 grains in 24 hours and 500 grains for six days a week for three weeks. It was not even necessary to omit it during pericarditis. He considered the addition of the sodium bicarbonate important, for if the salicylate were given without the bicarbonate a sort of acid intoxication might occur resembling diabetic coma. In chorea Dr. Lees also advocated the use of large doses, from 200 to 300 grains a day. Small doses, he said, were useless.

[Now this is one side of the question. On the other hand there are numerous physicians who claim that sodium salicylate is one of the most dangerous of our drugs, that not only is it a cardiac depressant, but it has a positive influence in disintegrating the blood. It would be interesting to investigate, and find out, if possible, if the physicians who hold such widely different opinions about the drug were not dealing with an article of different purity. Many physicians still claim that sodium salicylate prepared from oil of wintergreen or oil of sweet birch is much less irritating, much less toxic than the sodium salicylate prepared from carbolic acid. Who will settle this point authoritatively?—ED.]

Intravenous Medication. Rubens[1] has employed sodium salicylate intravenously in some 60 cases, and secured, on the whole, gratifying results. He used Mendel's mixture, 2 c.c. (30 min.) giving about 5½ grains of the salicylate. He reports that with this size dose no untoward effects need be feared. Both syringe and fluid should be aseptically clean, and he prefers a glass syringe so that any air bubbles may be removed before the injection. It acts very promptly, one case of rheumatic fever being noted in which painfully swollen and reddened joints were entirely relieved in five minutes, and the patient wished to get up. Apparently, however, the gain over the ordinary administration of the drug in rheumatism is merely one of prompt relief, as the pains return, and the course of the disease seems not to be shortened. In neuralgia, however, the improvement seems permanent. He has also used the method for differential diagnosis, and cites two cases of alleged traumatic pain from the lifting of heavy objects, in one of which the pain disappeared on the injection, and thus disproved its traumatic origin; where as in the other it persisted, indicating the justice of the patient's claim to injury. The injection also gave good results in dry pleurisy and in pleurisy with effusion, but was no use in influenza.

Influence on Uricolysis. Clinical experience has shown that for some reason or other salicylic acid is useful in a large number of conditions which for some time past have

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(1) Deut. med. Woch., Jan. 19, 1905.

been grouped under the general broad and uncritical heading of "uric acid diatheses." Although the work of Haig and his followers has been much spurned of late years, and probably with good reason, there nevertheless remains a substratum of observation that is in need of a more definite systematization, particularly as to the exact limitations of proteid metabolism, and the effects of deficient uric acid destruction in the body.

L. B. Stookey and Margaret Morris[1] have thought to attack some aspects of the problem from the therapeutic side, and in a recent short contribution on the influence of salicylic acid upon uricolysis they have brought out some interesting and significant facts on this subject.

Stookey has shown that subcutaneous injection into a dog of the liver extracts of a dog gives rise to an increased power of the liver to destroy uric acid during life. This is in line with modern pharmacologic teachings as to the stimulation of the liver cells by liver secretions—gall, etc. The same author has found that the tissue of the liver, kidney, spleen, and muscles taken from dogs treated with sodium salicylate shows a rate of uricolysis greater than that found in organs taken from normal dogs.

To test their hypothesis that the salicylates will cause increased uric acid destruction, these authors injected 0.1 gm. of sodium salicylate per kilo of body-weight for from five to ten days, and the uricolytic power of the organs taken from the treated dogs was compared with that of organs taken from normal dogs under identical conditions. These experiments all showed that the administration of sodium salicylate in dogs leads to an increased power to destroy uric acid, not only of the liver, but also of the kidneys, spleen, and muscles.

Although this does not entirely explain just why salicylates are valuable in the treatment of the "uric acid diatheses," "gouty muscles," etc., it does narrow down some aspects of the problem and the present study is a distinctly useful one.

Saline Injections. A. G. Hay[2] reports four cases in which the treatment of *sciatica* by means of saline injec-

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(1) Jour. Experiment. Med., May 25, 1907.
(2) Glasgow Med. Jour., May, 1907, abst. Jour. Am. Med. Assoc., June 8, 1907.

tions proved effective. He says that several injections may be required to effect a cure, but the improvement after the first injection has so far been sufficient to make the patients willing to return for further treatment. Hay makes the injection in the gluteal fold midway between the great trochanter and the tuberosity of the ischium.

In Sciatica. Grossman[1] reviews the history of this method of treating sciatica and then describes his experiences. He treated fifteen patients with severe and chronic sciatica and all were relieved at once of the pain. This striking result he found not always permanent. The pain returns sometimes in a milder form, but it is then amenable to such measures as superheated air, mud baths, hot packs, leeches and the like. No by-effects were noted in any case. The prompt action in banishing the pain, he declares, certainly justifies the use of this simple and harmless measure. He used a 0.6 per cent. salt solution, injecting from 50 to 100 grams, the patient complaining of pain in the limb and tingling as the needle approaches the nerve. In a few instances the injection was repeated. All but one of his patients were cured or materially improved.

Santonin. E. Negro, professor of neuropathology of the University of Turin, in 1901, called attention to the remarkable power exercised by santonin in relieving the *crises* of *tabes dorsalis.* This observation has since been repeated by Bricage in France in a number of cases. Recently Negro[2] published an article reporting continued success in these cases from this agent, after failure of antipyrin and acetphenetidin. He gives 0.05 gram of pure santoninic acid every three hours, or gives a dose of 0.1 gram, and follows it with 0.05 gram at the end of five hours. Combewalle and Chabert have also found marked relief to follow the administration of this drug in the pains of locomotor ataxia, but on the contrary, in simple neuralgia, they obtained no relief. After a number of trials they finally adopted the method of Negro, of giving a single large dose in preference to small doses frequently repeated. Bricage found that a dose of 15 to 30 centigrams of santonin rapidly calms the lightning pains, and

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(1) Wiener klin. Woch., Oct. 18, 1906.
(2) La Quinzaine therap., Aug. 10, 1906.

this effect lasts a considerable time. The feeble toxicity of santonin permits it to be used several days in succession without danger. The occurrence of xanthopsia is the signal announcing intoxication, and its appearance should be followed by suspension of the drug. Santonin is also useful in the laryngeal crisis of tabes. The experience of Negro now covers forty-three cases. Thirty of them were instances of shooting pains of the extremities of the trunk; eleven were gastric crises, and two had severe and frequent laryngeal attacks. He believes that the original plan of giving three doses a day of five centigrams each is the one that is best suited to most cases, and it is one which gives no bad results. This treatment may be continued for several weeks at a time, and may be employed in the interval as a preventive treatment. By the daily administration of 15 centigrams in three separate doses he has obtained very favorable results in 70 per cent. of the lightning pains; and also in 50 per cent. of gastric crises. In both of two cases of laryngeal crises successful results were obtained. As regards administration, it may be given in pills or tablets made with sugar.

Santyl. Arthur Schweitzer[1] discusses the new antigonorrhoic, santyl. In 38 cases of acute *gonorrheic urethritis* he obtained excellent results. It is preferable to all other internal remedies for gonorrhea, owing to the complete absence of the usual gastric and renal after-effects. The yellow, slightly aromatic, but tasteless oil passes the stomach without change and is split up and absorbed in the intestines. It can be detected in the urine after one hour. Exceptionally good effects were seen in posterior urethritis. In all cases where severe pains rendered local treatment impossible, protargol injections were well tolerated after santyl had been given for eight days, in doses of 25 drops three times a day. After combined treatment lasting from four to five weeks, a complete cure was generally established. Though the preparation can also be obtained in capsules (three capsules three times a day), the author prefers the drops, given in milk, since the capsules may not be dissolved before they reach the lower parts of the intestines, where the oil is no longer absorbed.

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(1) Pestor Med.-Chirurg. Press., 1906, No. 16.

Scopolamin. At a meeting of the Societé de neurologie, Rys[2] reports the following case of death as a sequel to the rea, which had been cured by injections of scopolomin hydrobromate.

Scopolamin - Morphin and Chloroform Anesthesia. Rys[1] reports the following case of death as a sequel to the combined anesthesia, which has had so much vogue recently. A fifteen year old boy, who had lymphomata of the neck, was admitted into the hospital for operation. He was given half of a Pravaz syringeful of a solution of 0.25 gram of morphin and 0.01 gram of scopolamin hydrochlorid; distilled water, 10 grams. He went to sleep, but as he reacted to pain another injection was given at the expiration of an hour. The reflexes now disappeared and operation was begun. As he was restless, it was decided to administer chloroform. The operation lasted one hour, during which he was given altogether about five grams of chloroform. After the operation he slept quietly. Respiration and pulse were good. About fourteen hours from the first injection he had a convulsion and could not be awakened from sleep, and did not react to touch or pain. The corneal reflex was absent, and the pupil reaction was insufficient and sluggish. From time to time convulsions recurred, with disturbed respiration. Temperature was 40.9 C. (105 F.). He was given an injection of tincture of musk and the convulsions stopped. He slept for five hours longer, when his pulse became very weak and rapid. He had an injection under the skin of 500 grams of physiologic salt solution. The pulse became better for a while, but then became weaker, and another subcutaneous injection of salt solution was given, and shortly afterwards, on account of renewal of the symptoms, he received a third injection of salt solution. Subsequently, respiration became weak, but artificial respiration failed to relieve him, and he died twenty-one hours after receiving the first hypodermic injection of the narcotic. The entire amount administered within the hour was 0.001 gram of scopolamin and 0.05 gram of morphin. [The proportion of morphin was evidently much larger

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(1) La Clinique, Jan. 18, 1907.

(2) Casepis Ceskych lekaru, and Wiener klin. Rundschau, Aug. 12, 1906.

than was appropriate and the dose appears excessive for a patient of only fifteen years.—ED.]

Kreuter[1] on the other hand writes from Graser's clinic at Erlangen to extol the advantages of this combined method of general anesthesia. He asserts that the lack of danger, as the dosage is so small, the small amount of the chloroform or ether required, and the reduction of secretion under the influence of the scopolamin, are not the least of its advantages. He thinks that it may materially reduce the number of cases of postoperative pneumonia. The only drawbacks of the method that he has discovered are the uncertainty of the action of the scopolamin and the subjective sensation of dryness. He recommends the combination particularly for the long protracted operations, even for much debilitated patients, adding his testimony that "it is the most humane technic known to date."

In Obstetrics. Albert Laurendeau[2] in a recent work on this subject advises a dose of 1/50 of a grain of hydrobromate of scopolamin combined with 1-5 of a grain of morphin to be given to adults by means of hypodermic injections in the lower extremities. This injection may be given if necessary three times in all at hour and a half intervals. This medication is not meant to replace chloroform absolutely. The toxic coefficient of scopolamin-morphin is less than that of chloroform. Its manipulation is more easy, and its method of administration is more definite. It may be employed in cases of tuberculosis, of heart lesion, and of cachexia. These drugs are advised in the case of patients who are subject to vomiting, in cases in which the intervention is of long duration, in cases in which surgical intervention is followed by severe pain, in first aid work, and in obstetrics. One dose suffices to abolish all consciousness and memory for several hours.

Sea Water. The injection of sea water in isotonic solution having been found to increase the quantity of hydrochloric acid in the gastric juice (on account of the sodium chlorid which it contains), Sellier has reported a case of *phthisis* in the stage of cavity in which, after one subcutaneous injection of 500 c.c. of sea water, he observed

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(1) Jour. Am. Med. Assoc., May 4, 1907.
(2) Le Jour. de Méd. et de Chir., Dec. 29, 1906.

improved appetite and amelioration of the general health. J. Charles[1] has recently reported the results of its administration by the mouth in cases of phthisis. In cases of the first stage, he observed generally an increase of appetite and access of vigor; in the second stage, the results were even more satisfactory. In the third stage the symptoms were favorably modified. Those who were without appetite were those who were benefited most by the treatment. It has also been used successfully in dyspepsia. This treatment should not be given in cases of neurotic hyposthenia, because of the disturbance attending it, and the gastralgia, which it sometimes produces.

In Scrofula. P. Schicardi[2] describes the use of injections of sea water for scrofula, tuberculosis, and similar conditions, which has been attempted since 1904. As used at present the water is obtained in the deep sea, far from any river and will keep pure for some days. It must be sterilized before use and diluted with freshly prepared distilled water. One part of sea water is used to three parts of distilled water. It has been found better to use small injections daily rather than larger ones at longer intervals. The temperature of the injections should be that of the body, and syringes of metal or rubber should not be used. Five to ten centigrams of isotonic marine serum are injected at once. There is no reaction, but thirst is produced which produces diuresis. The best place for injections is the anterolateral region of the abdomen. Aseptic precautions are observed, and local massage follows. The results of such treatment have been most encouraging.

Serum Therapy. Jacobson and Pease[3] observe as the result of their study that after *tetanus* is fully established serum therapy, however administered, promises but little as a curative agent. The intercerebral method, at first received with favor by the profession, has given results that are not particularly encouraging; nor does it commend itself as a means of reaching either the free toxin or that fixed to cells of the nervous system. Moreover, it is not devoid of danger, since one case is recorded which was first reported as cured, but which later died of cerebral

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(1) Jour. de méd. de Bordeaux, April 21, 1907.
(2) Gaz. Med. di Roma, November, 1906.
(3) Ann. of Surg., September, 1906.

abscess. The injection of tetanus antitoxin in the subdural space has been used extensively, but there is neither theoretical nor clinical reason for believing that this has attained any great measure of success. It seems to be a general consensus of opinion that intraneural injections can be of benefit only while tetanus is localized. As a prophylactic measure serum treatment deserves our fullest confidence, but as a therapeutic agent no methed has yet been discovered whereby the serum could be administered so as to reach effectively the toxin not free in the blood. The authors append in sufficient detail a large number of cases grouped in accordance with the method of treatment adopted.

In Tetanus. Guirrard[1] presented a young man, before the Societe de chirurgie, of Paris, who had recovered from an attack of tetanus following a wound in the head. While playing, he had been kicked in the face by a comrade. Five days later the symptoms of tetanus suddenly appeared. An injection of five cubic centimeters of antitetanic serum was given into the spinal canal. Each day subsequently ten cubic centimeters were subcutaneously administered. The patient made a good recovery after twenty-one injections had been given.

By countless experiments on animals the result of serum treatment can be foretold with almost mathematic accuracy, at the bedside, however, disappointments are frequent. By diffusion from the local lesion tetanus toxin first enters the motor nerve plates of the adjacent muscles, passing thence within the axis cylinders of these motor nerves upward to the motor ganglia in the cord, secondly by lymphatic absorption it enters the general blood current.

Tetanus antitoxin, unless directly introduced into the nerve tissue, probably never reaches these ganglia. It ascends the axis cylinder probably more slowly than the toxin. This seems to show why lumbar puncture and subcutaneous injection fail to produce the full effect, in that the antitoxin thus introduced does not reach the required spot. Direct injection into the spinal cord is certainly heroic and possibly dangerous.

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(1) Progrès médical, April 20, 1907.

C. A. Porter[1] suggests instead intraneural injection into the hypoglossal, spinal accessory or brachial plexus, anterior crural, sciatic or obdurator to intercept and neutralize toxin ascending from below. Intravenous and subcutaneous injections should be used at the outset and continued as long as there is possibility of absorption from the wound. To check absorption through the lymphatic system the writer suggests, instead of Bier's passive hyperemia treatment, circumcision of the limb down to the deep fascia, to cut off superficial lymph vessels, and soaking of the peripheral tissues with antitoxin, both subcutaneously and into the muscles. The local focus must be thoroughly eradicated whenever possible, and symptomatic treatment should not be neglected.

Its Value. Ohlmacher[2] discusses refined and concentrated antitoxin; antitetanic serum; the utility of antistreptococcus serums; the serum therapy of pneumonia; meningitis and gonorrhea; technic of serum injections; hypersensibility to serum, and the rectal and oral administration of serum. He says that the practice of using rectal injections when the bowel has been emptied by a laxative and flushed, and of diluting the serum with two or more times its bulk of normal salt solution is excellent. He also thinks it not improbable that further clinical experience will confirm the claims of those who habitually give curative serums by the mouth, especially under circumstances in which subcutaneous injection is impossible or in which no special urgency exists.

"*Anti-Bacterial Sera*" is the title of a timely article by O. H. Brown.[3] "Since it was first demonstrated," to quote, "that an antitoxin could be produced (for diphtheria) it seemed possible that other or all diseases might have antisera. . . . The drug-houses, working on this theory, have manufactured antitoxins for a large number of the infections, and have advertised them to the profession as being curative for the respective diseases. The physician who has a large country practice and not time to read the scientific medical literature, may have been led to believe that antistaphylococcus or antistreptococcus sera are to

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(1) Surg., Gynecol. and Obstet., August, 1906.
(2) Jour. of the Mich. State Med. Soc., January, 1907.
(3) Inter-state Med. Jour., April, 1907.

abscesses of septicemias what diphtheria antitoxin is to diphtheria."

The investigation of these sera, however, by Wright and his associates has shown that in certain cases, at least, such is not the case. A certain antistaphylococcus serum was found highly toxic; antiplague sera lowered the resistance of guinea-pigs to plague infections; an antitubercular serum had the same effect on the opsonic index as a dose of tuberculin. They therefore conclude that a large number of these antibacterial sera are in reality vaccines, differing from those usually termed vaccines only in the fact that the diluent of the toxins is serum in place of salt solution. In conclusion he states that:

1. Some of the so-called antistaphylococcus sera, the antiplague sera, antitubercular sera, and doubtless others, are not antitoxins, but, on the contrary, are toxins.
2. These antibacterial sera, provided they are administered in the proper dosage and at the proper intervals, may be used in some cases advantageously.
3. Properly made vaccines should be recommended as substitutes for these antibacterial sera, which are not antibacterial, but toxic in property.
4. The vaccines (antibacterial sera?) are most safely administered when controlled by the opsonic index.

Oral Administration. Diphtheria and tetanus antitoxins when given orally, according to McClintock and King,[1] are absorbed in sufficient quantities to show marked antitoxic properties in the blood.

In Bronchial Asthma. After an experience of more than twenty-five years in the practice of medicine, the most interesting case E. E. Kitzmiller,[2] of Piqua, Ohio, ever saw was one of bronchial asthma. The reason this case was of such interest is that he was the patient. Patiently and persistently he tried every means for the relief of this condition, but still suffered nightly with from one to three attacks, and for six years never escaped a night. Temporary relief from various remedies was received, but there was always a return of the attack within three or four hours after retiring. He used inhalations, from stramonium leaves to chloroform; also stimulants, one after an-

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(1) Jour. of Infectious Diseases, Oct. 30, 1907.
(2) Jour. Amer. Med. Assoc., March 23, 1907.

other, with but temporary relief. After his attention had been called to adrenalin, he used the solution 1:1000 in 5 to 10 min., doses hypodermically, and while these remedies never failed to relieve an attack, yet the condition would return in three or four hours if he went back to bed. In October, 1906, he heard of a physician who had had asthma, and while attending a case of diphtheria had given himself a prophylactic injection of 2000 units of diphtheria antitoxin. Strange to say, his asthma cleared up. It not only protected him against diphtheria, but completely relieved his asthma. After some correspondence, and knowing from experience it could do no harm, on November 14, 1906, the writer injected 4000 units of Mulford's diphtheria antitoxin. For five days he experienced no result, when he had a slight chill, followed by a temperature of 102° F., urticaria and slight rheumatic pains of joints.

He has now passed three months without a single attack of asthma, and is in better general health than for many years. He has used the antitoxin in two cases besides his own, with good results, but too recently to make a report. From his experience, the writer believes diphtheria antitoxin will give relief in all cases of bronchial or catarrhal asthma, while in cardiac asthma he would expect it to do no good.

In Pneumonia. G. Klemperer,[1] of Berlin, refers to experiments he made several years ago with a pneumococcus serum obtained by injecting rabbits with increasing amounts of pneumococci. In the majority of cases the temperature fell in from four to six hours after the injection, to remain at a low level for six to twenty-four hours. The general condition was very much improved but the local symptoms in the lungs was not influenced. Recently a new serum has been put on the market, Roemer's pneumococcic serum, which is certainly superior to the old preparation, since larger animals are immunized and the amount of culture introduced is greater. Paessler has already tried this serum in a large number of cases. While not a specific, the author reports that it undoubtedly brings

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(1) Therap. d. Gegenw., March, 1905.

about a favorable reaction and should be employed in all severe cases of pneumonia.

Diphtheria Antitoxin in Graves' Disease. R. T. Legge,[1] McCloud, Cal., reports a case of typical exophthalmic goiter in which the patient, while suffering from a diphtheritic attack, was treated with diphtheria antitoxin with the usual good results. Besides these, however, there was a gradual disappearance of the goiter and of Graves' disease of eight years' duration. A year has since elapsed with no return of the symptoms. Following the suggestion of this experience, Legge has since experimented with antitoxin in two cases of goiter, one of the simple form and the other of typical Graves' disease, with like good results. He remarks that if these cases are not simply coincidences, the matter is one which will bear further investigation.

In Rheumatism. According to Sherman[2] the results thus far obtained from the serum treatment of acute articular rheumatism are a material shortening of the course of the disease, no relapse into the chronic state, heart complications diminished in frequency, or more often entirely prevented, and chronic cases much improved, with a distinct tendency to complete recovery. The length of time required to effect a recovery varies with the severity of the case and the time the treatment is started. Sherman begins with an initial dose of 20 c.c. of the serum, followed with 10 c.c. every day until the inflammatory condition subsides. In severe cases 20 c.c. may be given every day. A good index as to tolerance of the serum is the amount of local inflammation produced by the serum from the previous injection. If there is considerable inflammation and swelling at the site of injection, the indication is that the patient does not tolerate the serum well. In these cases the serum should be given by rectum. In chronic cases it should be given at intervals of from two to three days, in doses of 10 c.c.

E. Bibergeil,[3] of Berlin, does not believe that the antistreptoccus serum should be employed in acute articular rheumatism, since the temperature and the subjective complaints are very much increased after each injection,

(1) Jour. Amer. Med. Assoc., April 22, 1905.
(2) Jour. of the Mich. State Med. Soc., January, 1907.
(3) Berl. klin. Therap. Woch., 1904, No. 50.

and much more relief will be obtained from the use of the salicylates. There can, however, be no question that the serum is very beneficial for the subacute and chronic cases. A reactive inflammation follows soon after the injection and the patients will be a little more uncomfortable for a short period, but soon the fibrous tissue which has formed in and about the joint will be absorbed. The serum of Menzer was employed in all cases. Muscular rheumatism and chronic ankylosing spondylitis were also influenced favorably. Erythema nodosum and purpura rheumatica are not contraindications, but in endocarditis of any form it is best to withhold the serum.

In Gonorrheal Rheumatism. Torrey[1] reports a very interesting case of gonorrheal rheumatism. The patient had suffered for about fifteen years, and had been treated in every other way without result. Dr. Rogers prepared a serum which was not only successful in this case, but also in a high proportion of others in which it was tried. The culture for this serum was isolated from an acute case of gonorrhea in a male patient who had not been treated. Gonococci were numerous. For purposes of inoculation a very satisfactory medium was a mixture of rich ascitic fluid and slightly acid beef infusion peptone broth in equal parts. Twenty to forty minims of the antigonococcus serum were administered hypodermically in the subcutaneous tissue in the back of the left arm. These were given twice a week for a period of about two months. The results were very good.

Effect on the Opsonic Index. Bosanquet and French[2] have studied the influence of Marmorek's antituberculous serum on the opsonic index of the blood of a number of patients suffering from advanced pulmonary tuberculosis. Early cases often improve wonderfully upon fresh air and plentiful feeding alone. From a study of their five cases they conclude that a series of daily doses of Marmorek's serum will, when administered rectally, usually produce a rise in the tuberculo-opsonic index; this rise begins after the first three or four doses and soon reaches a maximum, close to which the index remains for three or four weeks while serum is being given and does not fall until nearly

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(1) Jour. Am. Med. Assoc., Jan. 27, 1906.
(2) British Med. Jour., April 13, 1907.

a week after injections have been omitted. This rise in the opsonic index is coincident in some cases with an improvement in the general condition of the patient and a diminution of the diurnal variations of the temperature. Subcutaneous injections of the serum do not seem to have such good effect. Antidiphtheritic serum given subcutaneously caused a rise in the tuberculo-opsonic index, but an initial fall was observed.

In Tuberculosis. Rubinstein[1] treated thirteen patients with Marmorek's antituberculous serum and did not get encouraging results. In one patient the improvement was obtained, but this was a man with tuberculous glands which disappeared after the treatment. In the other patient there was some improvement in the general condition, but it could not be ascribed to the serum. Rubinstein concludes that Marmorek's serum is chiefly useful in surgical tuberculosis.

Holloway[2] gives his results of the serum treatment of tuberculosis in fifteen cases. As in the usual methods of treatment, the early cases improved the most, next to them were the cases of moderate severity, while the far advanced cases seemed to be uninfluenced. It is interesting to note that cases of mixed infection were said to be unfavorably influenced. The temporary lowering of the patient's resistance following the injection of the serum is supposed to render the patient only more liable to the tubercle bacillus. In these cases is the patient also rendered more susceptible to the inroads of the associated microorganisms?

Riviere[3] has treated a series of cases of tuberculosis in children with tuberculin, controlling the results by means of the opsonic index. His cases included tuberculous dactylitis and superficial abscesses, tuberculous glands, psoas abscess, tuberculous joint disease, abdominal tuberculosis and phthisis. His conclusions are as follows:

1. In tuberculin we have a most valuable remedy in localized tuberculosis. With proper dosage a steady uphill progress occurs both in the local conditions and in the general health. This improvement corresponds with an increase in the opsonic power as shown by the alternate

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(1) Roussky Vratch, April 14, 1907.
(2) Louisville Jour. of Med. and Surg.
(3) British Med. Jour., April 13, 1907.

improvement and relapse in superficial lesions with the rise and fall of the opsonic index of the blood.

2. Tuberculin, especially suitable for localized tuberculosis, is also of value in many cases of less localized infection, especially if nutrition be not greatly impaired. Many of the cases appeared hopeless from the onset. With marked wasting and general illness no good results should be expected; yet even under such conditions tuberculin is occasionally the turning point in a downhill course, so that unless the lesions are known to be widespread it is still worthy of trial.

3. Tuberculin cannot take the place of surgical procedures, but should be used in conjunction with these. Especially must caseous material, unless small in quantity, be removed, and this should be done at a time when the opsonic index is at a high level. On the other hand, many cases would escape the necessity for surgical measures if tuberculin were given sufficiently early.

4. The secondary infection, always present with open tuberculous lesions, generally lessens with improvement in the tuberculous process.

5. Tuberculin treatment should only be undertaken by those who have given it special study.

Dosage: One-two-thousandth of a milligram is the average adult dose, and fractions of this must be given to children according to their size. But children stand rather larger doses in proportion to their weight than adults.

Four years ago Roemisch[1] of Arosa published an account of his success with tuberculin in treatment of pulmonary tuberculosis. He has since had more extensive experience, the results confirming his previous assertions. Acute febrile cases contraindicate tuberculin; its special field is in the cases of long-continued, obstinate tuberculosis, dragging along for months unimproved by other measures. He keeps the dosage at the point where a local reaction is induced without a violent reaction. The signs that the limits of tolerance are being passed are disturbance in the general health, depression, loss of appetite, disturbed sleep, pains of varied kinds and increased ex-

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(1) Münch. med. Woch., liv, No. 3, abst. in Jour. Am. Med. Assoc., March 2, 1907.

pectoration. A slight rise of temperature is significant, especially in the morning and evening. He has found it a great assistance to change from one make of tuberculin to another at times, thus being able to continue without reducing the dose when symptoms of disturbance appeared.

In Puerperal Sepsis. Ed. Martin[1] considers the two new forms of treatment for puerperal sepsis that have come into vogue during the last few years, ligation of the vessels or total extirpation of the uterus, and the use of serum injections. The operative procedures are possible only in hospitals, while the serum can be easily employed by every practitioner. The author has employed the serum of Menzer in the following manner: As soon as the rectal temperature exceeds 38.5° C. (102° F.) the secretion of the uterus is examined microscopically. If no gonococci are found, 20 c.c. of serum are given at once. If the temperature still remains above 38° C. (100.5° F.) on the following day, another dose of 20 c.c. is given, and if necessary a third one on the day after. If the fever persists beyond the sixth day another course of injections of 20 c.c. each is given for three days. No cases were treated where there was an extension of the process to the tubes, parametrium or along the veins. The action of the serum was on the whole very favorable, since the patients treated did not have such high fever and were not sick for so long a time as those who did not receive any serum. Two patients died despite the use of the serum, but these suffered from an exceptionally severe form of sepsis. Bad after-effects were not seen, and the slight eruption which occasionally developed disappeared in a short time. The largest amount injected was 120 c.c.

In Acute Septicemia. G. H. Cressey[2] of Torquay, England, reports a case of acute septicemia treated, among other measures, with antistreptococcic serum, with recovery. The patient was a girl of fifteen years, who cut the great toe of her right foot, while paddling in a stream. A nasty-looking blister resulted over the ball of the great toe and an erysipelatous blush and tenderness developed in the ham and inguinal region. She became delirious and had

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(1) Berl. klin. Woch., July 16, 1906.
(2) Lancet, Feb. 25, 1905.

high fever. An incision was made into the toe and various forms of treatment resorted to, without success. A cough developed and became troublesome. The author tried antistreptococcus serum hypodermically in doses of from 10 to 20 c.c., injecting altogether 235 c.c., and, in conjunction with other measures, the serum brought about recovery. He divides this instructive case into three stages:

1. The stage of acute sepsis, during which there was lymphatic poisoning with swollen glands, high temperature and rapid pulse. During this period the antistreptococcic serum was used pretty regularly until the skin became exquisitely tender.

2. The formation of superficial abscesses, nearly all of them being immediately beneath the skin. During this stage the great vital organs remained practically unaffected until a pleuropneumonia appeared in the right lung.

3. The formation of an empyema, the operation of paracentesis thoracis with marvelously rapid result, followed by convalescence in which there were no drawbacks.

In Bacillary Dysentery. Vaillard and Dopter,[1] in a recent communication to the Academie de Médecine, presented a report of a second series of cases treated by them with the serum obtained from a horse which had been immunized by the dysenteric bacillus. This experience extended over the preceding year, and the report was based on a total of 243 cases, 220 of which were treated exclusively with the serum. In the former number were 43 patients, who were treated in institutions for the insane, the remainder being adults and children, in different epidemic centers. Of these 220 cases 99 were of the very grave form; 25 patients appeared likely to die, yet in fact only 10 deaths occurred, even including those who were almost dying when the injection was given (of whom there were 6). The mortality rate, therefore, appears to have been greatly reduced by the treatment. With regard to the therapeutic effects the reporters insisted on the alleviation of the symptoms, which almost immediately follows the injections, and on the rapidity of the cure. In a few hours the abdominal pains, the tenesmus and cramping pains are relieved, while the sometimes enormous num-

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(1) La Tribune Médicale, April 13, 1907.

ber of stools are rapidly reduced to one or two in twenty-four hours. The general condition also progressively improves. These effects are the more striking in cases where patients have been unsuccessfully treated by the usual remedies. Similar results have been recorded by other physicians, who have had supplies of the serum sent to them. Of the group treated in institutions for the insane it is to be said that the epidemics of dysentery are generally of grave character, because of the patients many are infirm, crippled or cachectic. The results in these cases really were less satisfactory than in the others, but here also the death rate was lowered. The effects of the serum are more prompt and decisive when given nearest to the onset of the symptoms. The sooner the injection is given the quicker and surer is the recovery. It is recommended to make the dosage proportionate to the intensity of the disease, and if the quantity given seems insufficient the injections may be repeated on several days consecutively. Under these conditions they hold that serotherapy, when rationally utilized, is capable of controlling the most obstinate and grave cases; it is the only truly specific remedy which we have against bacillary dysentery. In the discussion following this paper Vidal mentioned an extremely grave case in which, after the usual treatment had failed, serum treatment was tried. From the first injection the symptoms were sensibly improved. After fifteen days of treatment and the use of 200 c.c. of serum the cure was complete. The unusual length of time required was attributed to the fact that the serum treatment was not employed at the beginning of the illness.

Silver Salts. Butler[1] reminds us that every summer an epidemic of *acute mucopurulent conjunctivitis* breaks out in Palestine and Egypt, caused chiefly by Koch-Weeks bacillus. During this epidemic many hundred patients present themselves at the British Ophthalmic Hospital in Jerusalem. The author has in consequence had ample material to make a comparative examination of the therapeutic effects of silver nitrate, protargol and argyrol in the treatment of this disease. For many years silver nitrate has been exclusively used at this hospital, and it has

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(1) Ophthalmoscope, January, 1907.

given excellent results. Long experience has shown that it cannot be safely used in a stronger solution than 3 per cent., and a 2 per cent. solution has generally been employed. A 2 per cent. solution of silver nitrate, even if neither neutralized nor washed out, never causes any irritation, nor do the lids, even in infants, ever show any signs of cauterization. Any solution stronger than 3 per cent., unless at once neutralized with salt solution, has a caustic action, leaving a faint film of destroyed epithelium. This is especially the case with infants, who form the majority of the cases. Accordingly in making these tests a 2 per cent. solution of silver nitrate was always employed. In adults the silver solution was neither washed out nor neutralized. In infants the eye was washed out with boric lotion after the application of the nitrate. Protargol and argyrol were used in a 33 per cent. solution (33 grams in 100 grams of water). The solution was freely used and the excess was left in the eye. The solutions were always applied by means of small pellets of absorbent wool held in catch forceps. Drops for home use were always given—silver nitrate in 0.2 per cent. strength, or argyrol or protargol in 5 per cent. solution.

These comparative tests, which were made in the summer of 1905, were carried out as follows: Cases were chosen in which the disease was in an early stage and the two eyes nearly equally affected. One drug was applied to the right eye, another to the left, while the third was given for home use. The next day the eyes were inspected and the differential treatment continued day by day until either one drug established a superiority or it was certain that both were having an equal effect. Many of the patients were never seen again, probably the first application curing.

Forty-two cases in which silver nitrate was tested against protargol were followed up to a complete cure. The results were as follows:

Protargol superior in 62 per cent. of the cases.
Silver nitrate superior in 10 per cent.
Equal result in 24 per cent.

In many of the cases in which protargol proved the better drug the difference was not great, but it was sufficient to demonstrate its superior therapeutic action. In twenty-two completed cases protargol was tested against argyrol, with the following results:

Protargol proved superior in 50 per cent. of the cases.
Argyrol proved superior in .45 per cent. of the cases.
Even result in 49.55 per cent. of the cases.

Or, in short, in half the cases the effect of the two drugs was the same, and in half argyrol proved to be inferior in therapeutic action to protargol. In many of the cases in which protargol gave the best result the difference in its favor was very pronounced; in some of them the "protargolized" eye recovered after two or three days of treatment, whereas there was still a discharge from the "argyrolized" eye at the end of a week. Some of these eyes at once recovered when protargol was substituted for argyrol. In four cases argyrol seemed to cause great irritation, a symptom which the author has never seen caused by silver nitrate or by protargol. After twenty-two comparative tests the inferiority of argyrol to protargol had become so marked that the tests were discontinued.

In thirteen cases argyrol was tested against silver nitrate. In seven of them the effects were equal, in six argyrol showed a slight superiority. During the past summer (1906) the author used protargol for several hundred cases of acute mucopurulent conjunctivitis, and the results have in his opinion been decidedly better than he obtained with silver nitrate in former years.

His conclusions are that protargol is a more satisfactory agent than either argyrol or silver nitrate for the treatment of acute mucopurulent conjunctivitis, and that argyrol is better than silver nitrate. Protargol is perfectly safe up to 33 per cent., and may probably be used in even stronger solutions. Its application causes much less pain than silver nitrate, but more than argyrol. Silver nitrate in strong solutions is a very dangerous agent. It has unfortunately become the custom in Palestine to use 10 per cent. and even stronger solutions, with most lamentable effect. These results have been obtained in conjunctivitis caused by the Koch-Weeks bacillus, and do not in any way contradict the results obtained by others who have tested the colloid silver salts on gonorrheal conjunctivitis. There are several cases in the summer epidemic in which the gonococcus is present in large numbers, but they almost invariably lead to the nonulcerative cases on investigation.

Argyria. Burden-Cooper[1] says that the bluish-white pellicle which follows the application of nitrate to the conjunctiva is not coagulated albumen, as is usually supposed, but chlorid of silver deposited in the structure of the membrane, and this leads one to add a remark as to the form of application which is most likely to be followed by staining. The writer's experience is in favor of drops, and the explanation is as follows: A strong solution of silver nitrate (15 grains to the ounce) will be precipitated in the cells to such an extent as wholly to destroy their vitality—they are cast off, together with the chlorid they contain, and in this way the greater amount of silver chlorid is got rid of. Silver nitrate, however, penetrates deeper, but the critical concentration after the initial precipitation is insufficient to determine a deposit of chlorid in the cells in sufficient quantity to destroy them (weak solution). This chlorid undergoes the change above described. It is precisely this incapacity on the part of a weak solution of nitrate of silver to be precipitated in the cells in sufficient quantity to destroy them, combined with the frequency of application, that makes the weak solution most potent in causing a stain. To recapitulate briefly, then, as far as argyrosis is concerned:

1. The essential element in determining the stain is the soluble chlorids of the tissues.
2. It is chlorid of silver that is decomposed by light, not albuminous material.
3. The soluble chlorids influence the rate of penetration of silver nitrate.
4. The depth of penetration is a function of the concentration of the silver solution.
5. The seat of the stain is determined by the soluble chlorid, and is also dependent on the strength of the solution.
6. The brown stain is either argentous chlorid or an oxychlorid of silver.
7. The black stain is either metallic silver or the black oxid, probably the former.

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(1) Ophthalmoscope, January, 1907.

8. Drops are more potent in causing a stain than an application of a stronger solution by the brush.

The Organic Salts. The author then adds a word on the organic preparations of silver. From his experiments, which were undertaken with a view to ascertaining their penetrating power as compared with solution of nitrate of silver, his former faith in them, which was never very great, has now almost ceased to exist. One cannot go into them individually here; in fact, the author has not tested them all yet; but one can speak of argyrol and of its ally, collargol, which are, perhaps, the most disappointing specimens of the lot. The penetration of a 20 per cent. solution of argyrol as compared with weak nitrate is practically nil, and one is not surprised to find this, as the molecules of these organic silver compounds must be large, and if so must exert a powerful influence on the action of the body they collectively represent. Then, again, we know that organically combined silver is very inert as compared with the inorganic form. The amount of silver such bodies contain is no criterion of their therapeutic utility. The all-essential point is, can any of the large amount of silver enter into a reaction whereby it changes its electrical state and stability from that of its initial to that of its final state? If so, then it has some potential energy behind it.

Argyrol does not react with a soluble chlorid, and most of the silver it deposited as such on adding a dilute acid. The author believes it is wholly inert in the conjunctival sac, or at any rate almost so. Its intense color is a false expression of its energy. He has read of an experiment which consisted in placing a piece of catgut in a solution of argyrol, and after some hours finding it had percolated through and through. The experiment was to show its intense power of penetration. Untwist a strand of catgut and note the fibers it is composed of and see how absurd it is to assume great penetrative power on the part of a liquid which finds its way between a few fibers of catgut. The time has come for us to cease playing at therapeutics and to cast out of our pharmacopeia a lot of worthless material. Argyrol may have a mechanical effect, no doubt, and its sedative action is due to the large amount of silver it contains (metallic silver is sedative in its action), but when this is said the author believes we have summed up argyrol. It is interesting to note the comparative rarity of staining by argyrol or any other organic silver compound (protargol gives a reaction with a soluble chlorid, so he does not include it).

One is gratified to see from the report of the special committee appointed by the British Medical Association to investigate the bactericidal action of the various silver compounds that their results are in accordance with those of the writer of this paper. Approaching from an entirely different standpoint, they are led to conclude that the amount of silver a compound may contain is no criterion of its bactericidal power, and the same conclusion the writer would extend to properties other than bactericidal. He is quite aware, judging from the extensive literature on the therapeutic uses of the organic silver salts and the praise that has been accorded them, that his ideas rank with those who are in the minority, but they are based on convictions which he trusts are well grounded, and his remarks are presented with all respect to those who have labored in the same field with more favorable results.

He for one, he asserts, will think twice of casting aside and replacing with any such material as argyrol or its allies, the time-honored nitrate of silver, which has rendered such signal service in ophthalmology, and which is ever on the alert to enter into some reaction whereby its electrical state and stability of its ions are altered. Herein lies its virtue, so far as he can see.

In Acute Gonorrhea. S. Leon Gans,[1] instructor of genito-urinary diseases in the Medico-Chirurgical College, Philadelphia, publishes his extensive experience with colloidal silver in acute gonorrhea. From his study of 132 cases he concludes: Instillations of the drug never caused subjective symptoms of irritation. The most striking feature in the entire series was the absence of epididymitis in all cases. There were no complications in any case, unless posterior urethritis is so called, and this was minimized. All cases ran a much shorter course than under other plans of treatment. The long stage of decline was conspicuous by its absence. There was no sudden cessa-

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(1) Med. Bulletin, February, 1907.

tion of the acute discharge, followed by a persistent mucoid discharge, as with many cases treated by the old irrigation methods.

From 3 to 5 per cent. collargol solutions with mucilage sassafras pith, being preferable to watery solutions, were injected as soon as the patients presented themselves. The instillation is made with the greatest care and gentleness four times a day, immediately after urination, the instillator being placed just within the compressor urethra muscle. This insures medication of the infected membranous, and prostatic urethra; if introduced farther, the instillator deposits the fluid on the base of the bladder, which is rarely at fault. The solution is held five minutes, the meatus being compressed laterally. The urine should be watched, and any persistent turbidity not due to phosphates or urates is an indication to decrease the strength of the solution. Number and concentration of the injections should be adapted to the individual needs.

Thirty minutes after a 5 per cent. collargol solution had been thrown in and held for five minutes, a normal urethra was examined with a straight tube endoscope with an electric bulb. The mucous membrane was found to be stained brown and to have a peculiar luster, and small areas of normal tissues were apparent at irregular intervals.

The author appends a table which shows the characteristic effects of collargol in twelve typical cases taken at random.

Sodium Bicarbonate. In the whole range of drugs in common use there is, perhaps, none the pharmacologic value of which is considered less open to question than sodium bicarbonate. It has enjoyed a wide vogue for many generations in cases of *gastric pain* and hyperacidity of the stomach. It is important, therefore, to notice a monograph by Leon Meunier,[1] in which the value of this classic remedy in allaying gastric pain is discredited. Dr. Meunier states that the action of the drug is generally explained in the following way: Gastric pain is due to an excess of hydrochloric acid, which causes no inconvenience during digestion, owing to its absorption by the food. But when the stomach is empty the acid begins to exercise an irri-

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(1) Bull. des Sci. Pharmacol., 1906, No. 10; also Lancet and Boston Med. and Surg. Jour.

tating action on the sensitive nerves of the mucous membrane. The acid is neutralized and as a result the pain is removed by the administration of bicarbonate of sodium at an interval of two, three or four hours after a meal. Having doubts as to the validity of this theory, Dr. Meunier set himself to investigate both clinically and chemically the part played by the drug. He found that in nearly every one of sixteen cases the most severe pain was experienced when the hydrochloric acid in the stomach was at a minimum. As bicarbonate of sodium was uniformly successful in relieving the pain, Dr. Meunier was led to attribute its beneficial action not to a mere neutralizing effect, but to the production of carbon dioxid, which exerts a calmative effect on gastric pain. The acceptance of this hypothesis suggests the unsuitability of administering sodium bicarbonate alone as a source of carbon dioxid, since its therapeutic action is proportional to the quality of hydrochloric acid present in the stomach and is liable, therefore, to great variations. Moreover, the saturation of the hydrochloric acid by the sodium salt retards the progress of gastric digestion, as pepsin acts only in an acid solution, and it further retards intestinal digestion, as the acidity of the gastric juice has been shown by Pawlow to be the specific excitant of the pancreatic gland. This drug may thus reduce a patient to a state of alkaline cachexia, which led Trousseau to utter the dictum: "The abuse of alkaline drugs has done more harm than the abuse of mercury." Dr. Meunier suggests that it is more rational to produce carbon dioxid in the stomach by means of tartaric acid and a mixture of carbonates, so chosen as to evolve the gas slowly and continuously without modifying the acidity of the gastric juice. The tartaric acid is prescribed in 1 gm. powders and the alkaline powders contain sodium bicarbonate 0.4 gm., calcium carbonate 0.3 gm. and hydrated magnesium carbonate 0.2 gm. The patient is directed to add an acid and an alkaline powder separately each to a half a glassful of water, and when the pain commences to take alternately tablespoonful doses of the acid and alkaline draughts. Dr. Meunier has found that gastric pain is most readily relieved by this treatment, whereas the administration of the alkaline draught alone is much less efficacious. From clinical experience he concludes that the carbon dioxid acts as a sedative by accelerating the evacuation of food from the stomach.

Sodium Citrate. Cotton,[1] in a paper read before the section on Diseases of Children of the American Medical Association, reviews the hitherto unsuccessful efforts at percentage *feeding of cows' milk to infants.* No royal road to successful feeding by exact mathematic formula has yet been found. Recently he has been led to try sodium citrate as a remedy for softening the curds always present in cows' milk, unless reduced by dilution to a point far below the requirements of nutrition. We quote his language as to the manner of its use:

"Sodium citrate being very soluble in water, the method of employment is simple, as follows: An aqueous solution is ordered containing from 1 to 5 gr. to the dram. A quantity of this solution is furnished the mother or nurse with instructions to add to the baby's bottle immediately before feeding enough of the solution to represent 1, 2 or even 3 gr. of the citrate to each ounce of milk in the feeding mixture, according to the prescriber's idea of the requirements. The feeding mixture may consist of varying dilutions of milk with water or gruel with the addition of cane or milk sugar, with or without cream. No alkalies are added, the sodium citrate used being a neutral salt. A most noticeable feature in this method of feeding is the large proportion of milk in the feeding mixture that the infant will tolerate without evidence of gastric disturbance or the appearance of any considerable amount of undigested casein in the stools.

"If curds are vomited or appear in the stools, increase the amount of the citrate even up to 3 gr. to the ounce of milk, unless the indigestion is caused by excess or intolerance of fats. Bring the feeding up to whole milk as rapidly as possible, reducing the citrate also, but resuming it upon the appearance of indigestion."

Dr. Allen, his assistant, performed over one hundred experiments with the citrate in connection with milk-rennet, hydrochloric acid and flour and oatmeal gruels, and reaches the following conclusion:

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(1) Jour. Am. Med. Assoc., Oct. 6, 1906.

"1. Sodium citrate in .25 per cent. or more retards, and very high percentages will inhibit coagulation.

"2. The presence of HCl hastens coagulation.

"3. Diluting milk generally retards coagulation.

"4. Gruels appear to have little or no effect in retarding coagulation more than water when the citrate is used.

"5. The coagula of citrated milk are softer, smoother and more jelly-like or more flocculent than those of milk not thus treated.

"The simplicity of this method commends it, especially in dispensary and out-patient practice, where the mother's demand for 'medicine' for the baby's dyspepsia may be met by the standard solution of sodium citrate to be administered in teaspoonful dose in each bottle of the feeding mixture. In private practice it furnished another rational method of infant feeding."

In Dyspepsia. According to L. Lacheny,[1] sodium citrate gives favorable results in the treatment of dyspepsia in adults, especially in cases of gastric pain, occurring three or four hours after a meal, followed by vomiting. He prescribes a 10 per cent. solution of the salt in tablespoonful doses (cullerées à soupe), to be taken every five minutes from the time when the pain and sickness commence until they cease. The average dose required to give relief is from 30 to 60 grains; occasionally a dose of 15 grains will suffice, while in some cases it is necessary to give as much as 120 grains. In case of a relapse the treatment should be renewed, with the result that the symptoms frequently disappear in a few days. In fourteen cases treated in this manner seven were cured in eight days; one patient, however, was under treatment for three weeks, and two others for a month before a satisfactory result was obtained. The other patients were benefited by the treatment; one of these, suffering from ulcer of the stomach, experienced considerable amelioration of the pain from the administration of 45 grains of sodium citrate every day for thirty-seven days.

Sodium Sulphate. Maberly,[2] of Cape Colony, tells us that the answer which the majority of the medical profession will give to the question as to the antiseptic action of

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(1) Semaine Méd., Nov. 7, 1906.
(2) Lancet, Nov. 10, 1906.

sodium sulphate is doubtless a very decided negative, and yet the author believes he should submit that there are grounds, clinical and possibly chemical, for thinking that an affirmative one affords a better explanation of the action of the drug under certain conditions. This, at any rate, is his contention, and whether he is correct or not in that contention there are at least sound reasons for considering that sulphate of soda has an action over and above that of a mere aperient and liver stimulant, one which points strongly in the direction of its being an *intestinal antiseptic.*

Some years ago Major W. J. Buchanan, I. M. S., published a paper in the *Indian Medical Gazette* (December, 1898) on the treatment of dysentery by means of magnesium sulphate, and later the records of a series of cases successfully treated with sodium sulphate. After reading those papers the author carefully carried out his treatment with one-dram doses of sodium sulphate given every six hours in a large number of cases of dysentery and obtained excellent results. In his paper on magnesium sulphate Major Buchanan stated that it was necessary to secure "free, gentle purgation," but the cases in which the author treated the patients with sodium sulphate he found that purgation was not necessarily produced, but rather appeared to be undesirable; in fact, in the most successful cases the motions rapidly became less frequent, lost their dysenteric character, and became feculent and of normal consistence in from two to four days, in spite of the continued administration of the drug. These results gave rise to the question whether the accepted "gentle purgation" theory was a correct explanation of the action of the drug. With the object of obtaining a solution to the question he commenced giving the drug in infantile diarrhea. In the first cases in which he tried it he found that it produced irritation, and although the character of the stools improved somewhat, they did not decrease in frequency. Continued experimental administration, however, taught him that if he reduced the dose of the drug sufficiently to avoid any aperient action the motions in the majority of cases became less frequent, rapidly lost their objectionable odor and character, and became normal without medicinal treatment. Another marked result was that the vomiting, which is so frequently a troublesome complication in these cases, ceased after one to two doses. (Milk diet was, of course, avoided as far as possible.)

Since obtaining these results he has gradually relied more and more on sulphate of soda in the treatment of all septic bowel complaints, and has become perfectly convinced that the drug given in proper doses is a true bowel antiseptic, independently of any aperient action and, further, that if we wish to obtain this antiseptic action we must avoid doses which have an aperient action. The doses which the author is in the habit of giving commence with about six grains for a baby under six months old, increasing up to one dram in the case of the adult, given every six hours in one of the flavored waters, such as fennel. Children over six months old are very tolerant of the drug and seldom exhibit any aperient effects from doses of from 10 to 20 grains. Having arrived at these conclusions with regard to the action of the drug, he extended its use in his practice to typhoid fever, and was very interested to find that the results anticipated were obtained—namely, that the motions where loose and fetid became more normal in appearance and odor, with the natural result that the temperature was lowered and the disease ran a more benign course.

There are cases in which the drug absolutely fails to produce any effect, and for which it is very difficult to find an explanation, unless it be that there is some obscure change in the intestinal mucous membrane, which interferes with what may be considered the normal splitting up of the salts. The question now naturally arises, is it possible that a body such as sulphate of soda can have any antiseptic action, and if so to what is it due? There has always been an impression in the mind of the author that possibly the action may be due to the setting free of oxygen during the process of chemical decomposition of the drug in the intestines, and the interesting experiments published by Hay on the action of the saline cathartics in the *Journal of Anatomy and Physiology* in 1883-84 lend, at any rate, some color to such an argument, or rather enable one to build up a hypothesis which gives some support to that contention. In these experiments Hay showed that sodium sulphate produced copious intestinal secretion according to the amount of the dose and the strength of the solution. He showed further that the sulphate was split up in the intestines; the acid, being more easily absorbed than the base, disappeared partially from the small intestines, to return shortly afterward. In the meantime the base was gradually undergoing absorption and excretion by the kidneys, and never pursued the same peculiar course of absorption and re-excretion as did the acid. That portion of the salt which remained within the bowel unchanged, was the cause of the secretion of intestinal mucus and fluid, and of the consequent purgation, and not the portion which was absorbed into the blood.

Spartein Sulphate. Stuart McGuire,[1] of Richmond, Va., believes he has accidentally discovered in spartein sulphate a valuable remedy for the prevention and treatment of postoperative *suppression of urine.* In the last five years he lost more patients from postoperative suppression of urine than from all other causes combined, and this, despite the almost routine use of chloroform as an anesthetic. The cases were usually those with pre-existing nephritis from sepsis or cholemia. Shock had not apparently been a factor, as the condition would not develop for twenty-four to thirty-six hours. A patient operated on for retention of urine or for jaundice due to obstruction of the common duct would do well for one or two days, and just as the patient was thought to be out of danger there would come the news that he was passing no urine. He would become restless, then listless, would develop a stupor which would rapidly deepen into coma, and would die with all the symptoms characteristic of uremia. In the treatment of this condition he had tried water by mouth, under the skin and in the rectum; hot packs and vapor baths; cups and counterirritants; strychnin, digitalis, and nitroglycerin; calomel and saline purgatives, and in one case stripping the kidney capsules, with uniformly bad results. Two years ago he began empirically the use of spartein sulphate, and he now has a record of six cases in which he is sure the drug was the means of saving the patient's life. Its therapeutic effect is to increase the blood pressure, make the

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(1) Med. Record, Jan. 19, 1907.

pulse slower and stronger, and act as a powerful diuretic. Its action is manifest in thirty minutes after administration, and lasts for four or six hours. To get results spartein sulphate must be given hypodermically in from 1 to 2 gr. doses, repeated every three to six hours. Its use should not be delayed until suppression of urine exists, but it should be prescribed as a prophylactic as well as a curative agent. He does not claim it is a specific or that it should be employed to the exclusion of other measures, such as purgatives, transfusions, and hot packs. He does believe, however, from actual experience, that it is preferable to the drugs of the digitalis type in rapidity of action, ease of administration and efficiency of results.

W. P. Nicholson, of Atlanta, Ga., has used spartein sulphate in a similar way. He prefers it to digitalis as a heart tonic. Therapeutically, it combines the virtues of being a powerful heart tonic and of dilating the capillaries. An important point is to give it in large doses—say 2 gr. Usually it is put up in doses of 1/10 gr. Its value depends on large doses. He recalls one case in which suppression of urine lasted for forty-seven hours, but the patient finally recovered.

Sterilized Air. The treatment of *sciatica* and *neuralgia* by hypodermic injections of sterilized air has been tried not only at Lyons, but also at Bordeaux and Paris. There have recently been published[1] thirteen cases—three sciatica and ten intercostal neuralgia—which had proven quite refractory to treatment and had been cured by this means. All who have employed the technic indicated note that they have had no complications. The technic is very simple. After sterilizing the region where the injection is to be made a sterilized hypodermic needle is inserted under the skin, and as soon as one is sure that no blood-vessel has been punctured a rubber tube is attached to the needle and air from a rubber bag is injected from simple compression. To be quite safe it is best to place a little glass tube with cotton wadding between the needle and the bag. The injection should be stopped when the patient no longer complains of pain. A slight amount of massage should be car-

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(1) Jour. de Méd. de Bordeaux.

ried out afterwards and repeated every day till crepitation has disappeared.

Stovain. E. Sonnenburg[1] has used the new local anesthetic, stovain, by injecting it into the spinal canal between the third and fourth lumbar vertebræ. Only 0.04 to 0.08 gm. of a 10 per cent. sterile solution was used, some of the cerebrospinal fluid being first drawn off, the anesthetic mixed with it and the mixture returned to the canal. Complete anesthesia of the lower part of the body ensues usually within four or five minutes—sometimes, however, not until about ten, and lasts from one to one and a half hours. Sonnenburg has performed various surgical operations, from amputation of toes to appendectomy, on patients under this anesthetic, using it successfully in 45 cases, and reporting 11 failures, the latter being due, in his opinion, to imperfect technic in the injections. Stovain is not quite so active as cocain, but much less poisonous and with no danger of producing syncope.

Strontium Salts. J. B. Nias,[2] in the Pathological Laboratory of St. Mary's Hospital, London, made a number of experiments on a sufferer from *hemophilia,* for whom it became desirable to find a drug as a substitute for calcium, as repeated observation established that in his case calcium salts were not absorbed when administered by the mouth. The result of his observations proves that the subject in question can absorb with facility the soluble salts of strontium and magnesium when they are given by the mouth, while refractory to those of calcium.

From his experiments the author believes it is clearly established that the lactates of both strontium and magnesium in doses of from 1 to 2 gm. (15 to 30 gr.) are serviceable substitutes for the salts of calcium when the latter are not absorbed from the alimentary canal, thus enabling us to dispense with the dangerous practice of hypodermic injection, which his experience does not show to have any advantage in speediness of action.

In Epilepsy of the Insane. J. M. Bennion[3] chose patients for his experiments who have been under supervision at the Oxford County Asylum for several years. Without excep-

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(1) Deut. med. Woch., March, 1905.
(2) Lancet, Aug. 18, 1906.
(3) Lancet, Jan. 5, 1907.

tion all are very severe cases of epilepsy, both in regard to their fits and also their mental condition. Each patient has been, so far as possible, under the same dietetic and hygienic condition. The ordinary daily routine of the asylum has not been altered in any way, so that any effect of the treatment has taken place under the same conditions that were in vogue before it was started.

Twelve male and ten female patients, all of whom were insane and suffered from epileptic fits at frequent intervals, were selected. To each patient 30 gr. of strontium bromid, to an ounce of water, was given three times a day. Some of the patients were also given during a fixed period, 15 gr. each of the sodium and strontium bromid thrice daily. A comparison of the two treatments shows that there was a decrease in the total number of fits by 49, or 29 per cent. in favor of strontium bromid. The patients were brighter in every way and the attendants considered their general behavior improved.

The author summarizes his investigations as follows:

"1. That, judging from my own experience, strontium bromid, as a rule, acts better in controlling the number and severity of the fits than the mixed bromids of sodium and potassium. 2. That strontium bromid rarely causes depression. 3. That rashes remained absent in all my cases. 4. That strontium bromid, in my opinion, acted best and most consistently on the female patients, in all of whom the action of this drug, as regards controlling the fits, was far superior to that of the mixed bromids. 5. That the maniacal symptoms of the male patients while taking strontium bromid, were not influenced to any perceptible degree. 6. That the mental condition of the female patients appeared to improve. 7. That, considering the severity of the type of epilepsy on which I have made observations with this drug, there seems to me reasonable grounds for supposing that, with a milder form of epilepsy than is usually met with in an asylum, an even greater benefit would be derived from the administration of this drug. 8. Lastly, I should be inclined to advise those who have epileptics under their care to give the bromid of strontium a fair trial, and I think they will find many cases in which this drug will have pre-eminence over the other bromid salts."

Strophanthus. R. A. Hatcher,[1] of New York City, enumerates the *advantages possessed by strophanthus over digitalis* and digitoxin, and notices as somewhat remarkable the fact that it has not rivaled digitalis more in the favor of the profession. It is prompter in its action, is said to be less cumulative in its effects, is more soluble in water, is less irritant, and, therefore, can be used hypodermically, while at the same time it is much more active and less expensive than digitoxin. It produces much less vasoconstriction in the splanchnic area than digitoxin, and while this is a disadvantage in shock, it is better for diuresis; according to Gottlieb and Magnus, in contrast to digitoxin it produces no constriction of the coronary vessels, which is also an important point when cardiac hypertrophy is desired. Of late years strophanthus has been used with satisfactory results in Holland, Belgium and France, showing that a fair degree of uniformity of the drug has been obtained. In order to test the conditions here in this respect, Hatcher procured and tested a number of samples of tincture of strophanthus from the east side drug stores in New York City, comparing them with other samples carefully prepared by himself from the best obtainable seed, as well as with specimens prepared from seed which had been on hand for different periods of time. The physiologic test advocated by Fraenkel of determining the amount required to produce systolic standstill of the ventricle per 100 gm. of frog in one hour was employed, which has been satisfactorily demonstrated to be an index of therapeutic activity. Cats and dogs were also used in the tests as well as frogs. The experiments are detailed and their results prove, he thinks, that we have a much more uniform product in the tincture of strophanthus, even when obtained from the poorer class of drug stores of New York, than is the case with the digitalis preparation. It may be stated, positively, he says, that there is no difficulty in obtaining tincture of strophanthus in the open market of quite as nearly uniform potency as obtains in the case of the tinctures of other drugs which are not standardized, and that the seeds do not undergo deterioration on being kept for several years, possessing in this respect a great advantage over digitalis leaves, which de-

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(1) Jour. Amer. Med. Assoc., April 6, 1907.

teriorate rapidly despite care on the part of the pharmacist.

Strychnin. Retrivor[1] reports nine cases of *sciatica* in which the most favorable results followed the daily injection of gr. 1/60 or 1/30 (0.001-0.002 gm.) strychnin in the region of the painful part. While previously ordered remedies had proven worthless, all cases improved after the strychnin injections.

Poisoning. Otto Niedner reports a case of strychnin poisoning in which recovery took place in spite of a dose nearly seventy times as large as the maximum. A young man of 38 swallowed 2 grams (30 grs.) of strychnin nitrate in a glass of claret. After a short sleep he woke up with severe pains in the back and convulsions. His stomach was pumped out after some fruitless attempts, with five quarts of tannin solution. Inside of one hour he was given 30 grs. chloral and two doses of 0.005 (1/12 gr.) cocain intramuscularly. The convulsions still persisting, he was put under chloroform and the next day was allowed to go home, where he completely recovered. It is probable that the claret in which the strychnin was dissolved neutralized, owing to its tannic acid, a considerable portion of the poison by converting it into the slightly soluble tannate.

Indications.[2] During or at the termination of operations of great magnitude entirely too much strychnin is being given everywhere; it is not at all uncommon to see a half centigram (1/15 gr.) injected at one time—for heart failure. Strychnin should not be given with the object of correcting heart-failure; it is a stimulant to the respiratory center and should be given when the breathing is shallow and too slow. It is therefore especially indicated in anesthesia from the hyoscin-morphin-cactin tablet when the number of respirations falls below six per minute. It should not, however, be given until the end of operative work, whenever possible, as it is apt to cause the patient to become nervous and somewhat excited.

Styracolin. Styracolin, guaiacol cinnamate, being odorless and tasteless, is readily taken, according to K. Eckert[3]

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(1) Vratchebenaya Gazetta, 22, 1906.
(2) Amer. Jour. of Clinical Med.
(3) Bull. gén. de Therap., 1906.

it traverses the stomach without decomposition and is saponified in the intestines; the guaiacol and cinnamic acid liberated are at once absorbed. It exercises a beneficial effect on the general condition and appetite of the patient, and diminishes the nocturnal sweating. The dose for adults is 15½ grains twice or thrice daily.

Sulphuric Ether. James,[1] in treating *sciatica,* injects direct into the sciatic nerve by means of a long hypodermic needle sulphuric ether in doses ranging from fifteen to thirty minims. He reports having cured some very obstinate cases with this method.

Thermotherapy. Fell,[2] although experimenting with dry and moist heat, seems to be more in favor of the former, since by the use of more modern apparatus it is comparatively easy of application. The doctor recapitulates the influence of intense dry heat as follows: "1, To stimulate the circulation; 2, to cause combustion to be more nearly complete; 3, to provide for elimination; 4, to increase metabolic changes."

The writer further states, that, since germ growth is rapid at certain temperatures, if this temperature can be disturbed either by heat or cold the life of the germ is interfered with. While cold will have the same effect as heat in doing this, with cold metabolism is checked and with heat it is increased. Thus the application of cold decreases the power or resistance, while intense dry heat increases it.

Dr. Fell brings to our notice again the fact so often emphasized by the editor of this department, that we have in the dry hot-air apparatus an inexpensive means of treating certain chronic cases (not malignant) which heretofore have been unsatisfactorily treated and which in many cases we have dreaded to see come into the office, but can now assure them of benefit. The doctor claims that it is indicated in all cases in which heat has always been indicated; also in some cases where the ice pack and cold sponge baths are used and with better results. Dr. Fell also considers the technic of administering heat by the use of both the local and the body dry hot-air apparatus, but dwells more particularly upon the technic of the

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(1) British Med. Jour.
(2) Medical Council, March, 1907.

body treatment. She describes the apparatus in some detail as well as the treatment after the patient has come away from the apparatus. She speaks of the bad results that are often obtained by too long and improper treatment, the patient being weak and nauseated, with dizziness, etc.

David E. Hoag, department editor of the *Journal of Advanced Therapeutics* in commenting on Dr. Fell's paper suggests such changes in the technic as would be helpful in the cases where bad results have heretofore seemed unavoidable, and adds: "It must be remembered that the first time the patient takes a treatment there is more or less apprehension and dread. This is not to be wondered at when the intelligent man or woman realizes that water boils at 212° F., and that in the hot air apparatus a degree of heat amounting to 350° or 400° F. is often obtained. This could not be withstood at all if it were not for the fact that proper wrappings were employed and that the heat was intensely dry and free from moisture. It is always a good idea to start the heat under the apparatus for about five or ten minutes before the patient or the part is exposed, thus removing all moisture. The wrappings should be in close contact with the skin at all points, as if there happens to be a place where they are not in contact there a burn will occur, because the moisture will collect and not being absorbed, under the intense heat will become hot, a scald being the inevitable result. Should the feelings of the patient transmitted to you be an inkling of what may occur, it is well to pull the patient out of the apparatus at once, adjust the wrappings more thoroughly, and again proceed. It must be remembered that the good effect of heat, especially dry hot air, is due to a high degree of heat kept up for a short time. Thus given we have stimulation only; continued too long we have depression. The degree of heat as shown by the high registering thermometer in the apparatus, is of little importance as compared with the temperature and pulse of the patient. It has been the practice of the writer in institutional work, with which he has been connected, to let the pulse and temperature be the infallible guide. It should be most closely observed, and should be taken fifteen or twenty minutes after the patient has been put into the apparatus and every five minutes thereafter. Whenever the pulse counts 120 or the temperature reaches two degrees above normal, it is an indication that the patient has had treatment enough for that particular time. It is usually my custom to allow the patient to remain in the closed apparatus, but with the heat turned off, for ten minutes, then pull out or open up the apparatus and allow the patient to remain on the table with the wrappings intact for twenty minutes more; then the sponge bath and alcohol rub as suggested by Dr. Fell's paper. The doctor very properly observes that the time will come when your patient will no longer have to seek other parts for a change of climate but can obtain it in your own office."

J. A. Riviere,[1] after defining heat, points out its favorable action on the feeble, anemic and nervous. At the same time, in treatment by climate one cannot separate heat from light, the latter being most important. Thermic agents are the most ancient and most deserving, but their technical application is nowadays better understood and more precise. Heat is one of the most important stimulants to living cells. The hot bath is the most common means of applying heat as a therapeutic agent, and is useful in a great number of conditions; it is contraindicated in plethoric individuals and in advanced tuberculosis. The usefulness of local applications of hot water is well known. The general hot douche is a remarkable means of bringing blood to the surface of the body, of accelerating the circulation, etc. Nothing is more cleansing than the moist vapor bath, since it cleans out the pores from within by the expelling force of hypersecretion. Certain skin eruptions are easily cured by these vapor baths, and it is not rare with their disappearance to find a marked increase of uric acid in the urine. Radiant heat baths—a sun bath being the best—can be made artificially by lamps. The author has long since urged the use of heat in acute illnesses; in typhoid and appendicitis especially a judicious combination of calomel, water and heat is strikingly useful. Negative results in these cases are due to neglect of one of the factors, usually heat. Cold applications and cold baths explain the great mortality of fevers.

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(1) Ann. de physicotherape, 1906, through the Archives of the Roentgen Ray.

Thiosinamin. Since Hebra introduced thiosinamin in the treatment of lupus, many favorable reports of its use have been received from all parts of the world, and the use of the drug has been gradually extended to other conditions, particularly the *absorption of scar-tissue* of the surface and the interior of the body (fibrous strands, sclerosing endocarditis, pyloric stenosis, urethral stricture, etc.). One great difficulty has always been the method of administration, since thiosinamin is soluble in water only with great difficulty, and alcoholic solutions given hypodermically are as a rule very painful. F. Mendel,[1] of Essen-Ruhr, experimented on various double salts and discovered that the combination of thiosinamin with sodium salicylate is easily soluble and well adapted to replace thiosinamin. To this combination has been given the name fibrolysin. It may be used by hypodermic or intramuscular injection, and may even be injected directly into the veins without danger of embolism. For the latter method, the needle of a sterile syringe is introduced into the vein at the bend of the elbow, then the entire contents of a tube, [2.3 c.c. (35 min.) of a solution of fibrolysin, 1.5 (23 gr.) to water, 8.5 (2¼ drams)] are slowly injected. This amount will correspond to 0.2 gm. (3 gr.) of thiosinamin. Soon after the patients will experience a peculiar smell and taste, which is proof that the injection has been successful. The action of fibrolysin is often seen after a single injection. Thus fibrous strands will soon become soft and elastic, and superficial tuberculous lesions will begin to absorb. A microscopic examination of the tissues at this period shows a serous imbibition similar to that observed with Bier's constriction.

The indications for the use of fibrolysin are very manifold. Good results are almost invariably seen in stenoses, strictures, ankyloses, compressions, kinking, cirrhosis, etc., provided the formation of fibrous tissue has not advanced too far. Mechanical treatment is not indispensable in benign strictures of the esophagus and urethra, since fibrolysin merely softens the tissues. By subsequent sounding the pathologic conditions will, however, be more readily overcome than by sounding alone. The number of injections

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(1) Therap. Monatsch., February, 1905.

necessary will vary from 5 to 50, given every day or second day. No bad after-effects have been noted.

In Dupuytren's Contraction. W. Duncan Lawrie,[1] honorary surgeon to the Birmingham Crippled Children's Union, reports briefly, but effectively, by three illustrations, a case of Dupuytren's contraction in which fibrolysin was of great service. The patient, a woman, aged 42 years, came under observation in November, 1906. In the first figure the author showed the bad condition of the hand at the commencement of treatment. The patient could only come for treatment at the week ends, and accordingly the contents of one of Merck's vials containing 2.3 c.c. of fibrolysin were injected on Saturday, Sunday and Monday of five successive weeks. In the second figure was shown the good results of this treatment. The infiltration of the palmar fascia was now limited to one band. It was previously much more diffuse. The third figure showed an almost normal hand, subcutaneous division of the band referred to having been made by one incision.

In Esophageal Stricture. K. Pollar[2] relates a case observed in the service of Prof. E. Neisser, of Stettin, which establishes the efficacy of thiosinamin in cicatricial strictures of the esophagus. The patient was a man of 30, who suffered esophágeal stricture as a result of swallowing caustic soda. The stricture permitted the passage of the a very fine sound, and of very soft food; but, at the end of several years, in spite of the methodical passage of sound, the atresia became complete, and the patient was unable to swallow even liquids. A gastric fistula was made, by means of which the patient was abundantly fed, but he became worse, notwithstanding. Then, half a cubic centimeter of the following solution was injected into the forearm: Thiosinamin, 2 grams, dissolved in 8 grams of glycerin, to which were added 10 grams of distilled water. Two other injections were made in the course of five days. After the third injection it was easier to introduce a slender sound down to the bottom of the stomach, and the patient was able to swallow liquid food. Two weeks later, a sound as thick as the little finger was passed, and the patient could swallow purees. One month later the largest sized

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(1) Lancet, March 30, 1907.

(2) La Habana Medica.

sound was introduced without difficulty, and the patient was eating solid food.

J. Hoenig,[1] of Budapest, reports equally good results in strictures of the esophagus. A 15 per cent. solution in glycerin and water was employed, the patient receiving ½ to 1 Pravaz syringeful every third to fourth day. After 26 injections the patient could swallow easily and even thick sounds could be passed into the stomach. There were no after-effects, except slight transient headache on the day of injection.

In Scar Stenoses. Ernest Sachs,[2] assistant at the Moabite Hospital in Berlin, reports that in addition to the mechanical treatment of scar stenoses, subcutaneous injections of 10 per cent. thiosinamin solutions have been employed at the hospital with good effect. In pleuritic adhesions, in chronic perigastritis, and in urethral strictures the thiosinamin has proved serviceable. He reports in full a case of pyloric stenosis in which injections of fibrolysin, a solution of thiosinamin and sodium salicylate gave very favorable results.

Stimulated by the many favorable reports on the use of thiosinamin wherever extensive scar tissue has formed, Mellin[3] employed this remedy in a severe burn of the second and third degree which had healed with marked disfigurement. The left arm was held at a right angle and could not be extended, the fingers were stiff, and the mouth could hardly be opened. A total of 2.3 gm. (55 gr.) of thiosinamin were given in 25 injections. The scar tissue softened remarkably and the patient could be discharged completely cured.

Thyminic Acid. According to R. Fenner[4] thyminic acid is a nuclein derivative which, it is claimed, has the property of holding uric acid in solution and preventing its precipitation. It represents nucleic acid from which the uric acid yielding bases have been removed, and is the natural organic solvent of uric acid in the body. It thus prevents its deposition in the tissues in the form of salts. Minkowski gives its formula as $C_{30}H_{40}N_4O_{15}2P_2O_5$;

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(1) Therap. d. Gegenw., 1905, No. 2.
(2) Therapie der Gegenwart, Jan. 1, 1907.
(3) Deut. med. Woch., 1905, No. 5.
(4) Pharm. Jour.

Kossel as $C_{16}H_{25}N_8P_2O_{12}$. It has the very interesting property of holding in solution practically its own weight of uric acid at a temperature of 20° C. (68° F.) while this property of retention is increased by 50 per cent. at the blood temperature of 37° C. (98.6° F.). Thyminic acid may be given internally as a powder, in an elixir, or in the form of compressed tablets. Its administration has not been attended by any toxic or untoward symptoms. It is best given with or immediately after meals, in doses of from four to seven grains.

Thyreoid Preparation. O. T. Osborne,[1] of New Haven, read a paper on thyreoid preparations at the recent meeting of the Medical Association of the City of Greater New York. After referring to the physiologic actions of the thyreoid, he laid stress on a point to which, he said, he had often before directed attention, viz., that all increased secretions of this gland would give symptoms, and all decreased secretions would give symptoms. He then went on to say that the gland was easily excited temporarily to increased secretion by emotion, grief and sexual excitement, and for a more prolonged period during menstruation and pregnancy. It was thus seen that the thyreoid is a much more active and necessary gland in women than in men, and, in fact, nearly three-fourths of all cases of disturbed thyreoid secretion occur in females. The profuse menstruation of young girls is largely due to excessive activity of this gland, while underactivity of it gives amenorrhea and chlorosis. Many times chlorosis is as successfully treated with small doses of thyreoid as with iron, and in amenorrhea no drug is, in his opinion, at all comparable to the thyreoid extract. As age advances, from 50 on, the thyreoid normally begins to secrete less than at earlier ages. Vasomotor tension therefore increases and arteriosclerosis develops, and with it all the phenomena of connective tissue deposits. The nervous excitability of our present lives leads to overstimulation of the thyreoid, and with nervous tension, strain and alertness, causes men to have arteriosclerosis earlier than formerly.

Another fact which has to be taken into consideration is that any gland may have its chemistry so disturbed as to

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(1) N. Y. Med. Jour., Dec. 1, 1906.

offer a perverted secretion. This is doubtless the reason that in some cases of hemophilia thyreoid feeding has been successful, while in others, it has made the condition worse. The thyreoid, he believes, has something to do with the production or destruction of the red blood corpuscles. He has seen the blood count improve under thyreoid in cases of chlorotic anemia, and he has seen cases of epistaxis and uterine hemorrhages, in stout women, with slow pulse, in which the bleeding was stopped by thyreoid. On the other hand, thyreoid will make stout, overweight women who have amenorrhea menstruate, and make normal women menstruate more profusely. The thyreoid also has something to do with sugar metabolism. Glucose has often been noted in the urine when thyreoid treatment has been pushed, and he has seen cases of diabetes have the sugar output greatly increased under such treatment. Myxedema is often complicated with diabetes, and the same is true of acromegaly, a disease in which the thyreoid is always abnormal. Moreover, cretins have become affected with diabetes under thyreoid treatment.

Dr. Osborne thinks it unnecessary to discuss the successful use of thyreoid in cretinism and myxedema. In ordinary goiter he believes it would often do harm by stimulating the gland to increased secretion, and perhaps by causing Graves' disease to develop from a simple goiter. Here an iodid is much safer than large doses of thyreoid, while in exophthalmic goiter thyreoid is positively contraindicated. Cases of Graves' disease reported to have been improved by thyreoid were probably in a period when the gland was beginning to diminish its secretion and the case was naturally curing itself. There can be no doubt, he thinks, that the proper treatment of this affection is by one of the antithyreoid preparations or sera. Obesity is well treated by small doses of thyreoid, long continued; but large doses are dangerous. Of the dried gland, 3 to 4½ gr., two or three times a day, is generally sufficient, and this treatment is very valuable in the case of young people, especially in women under 40, with scanty menstruation. When perspiration is nearly absent, with a dry and scaly skin, whether occurring in infancy or in old age, small doses of thyreoid are of great service. The eczemas of old people can also be improved by the use of thyreoid. In high blood tension, after 50, he has seen marked benefit from it, and the same is true of the asthma of old age.

The speaker said that he now has on his records a number of cases of epilepsy treated successfully with thyreoid. His attention had first been drawn to the use of this preparation in epilepsy by several cases of the disease occurring in women at the menopause, the patients showing a suggestive periodicity. In several cases, also, in young girls at the time of puberty, the fits showed periodicity. He believes the trouble is purely toxic, and that the toxemia is in excess periodically when the patient should have menstruated. In such cases he found he could control and prevent the epileptic attacks as well with thyreoid as with bromid, and with much better results to the system. He is also convinced that in uremia thyreoid did good. While it could not cure the condition, it seemed to prevent the toxemia which caused convulsions, and even warded off, for a time, the coma. In pregnancy he believes that when there are headaches, and many nervous symptoms, and especially if the kidneys are not doing perfect work, thyreoid should be given in small doses as a preventive of eclampsia.

The Thyreoid Sign. H. Vincent,[1] in a communication to the *Societe medicale des hopitaux,* stated that he had found in a large number (seventy-four) of cases of acute rheumatism, a symptom, which he calls the "thyreoid sign," of which the clinical demonstration is very easy. It is characterized by a tumefaction (sometimes unilateral) of the thyreoid gland, and by pain, rarely spontaneous; but always very marked when each lobe of the thyreoid is compressed between the fingers. It is not seen usually in light cases, nor in chronic or fibrous arthritis, but only in acute, febrile, articular rheumatism. The swelling of the thyreoid ordinarily follows the course of the articular fluxion, it decreases as this gets less, and it reappears, though in light form, in cases of relapse. In a certain number of cases he has seen the thyreoid sign, which had been very marked at the outset of the affection, disappear very rapidly in spite of the persistence, and the acute character of the articular determinations. Sometimes, indeed, the

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(1) Bull. méd., May 4, 1907.

body of the thyreoid would become scarcely perceptible, either on inspection or palpation. This he has come to regard as a feature of unfavorable prognosis, and indicative of a slow prolonged course, perhaps extending to several months. In other cases, after a temporary enlargement, the thyreoid body diminishes greatly in size, but the case continues to be attended by irregular attacks of fever, and the articular symptoms persist. In these cases, improvement is slow, and the patient becomes very anemic and thin. The simultaneous reduction of the thyreoid gland and the articular inflammation as the joints are restored to the normal condition, is a favorable sign, whatever interpretation is put upon this phenomenon, which recalls the changes in the volume of the spleen in a large number of infectious diseases. The author has treated the patients in a few of these prolonged cases of acute articular rheumatism accompanied by athyreodism, with thyreoid extract. Thus far, however, the number of cases has not been sufficient to enable him to draw any conclusions as to the value of this agent in such conditions, but he considers it worthy of further trial.

Thyreoid Grafts. Hector Christian[1] read a communication before the International Medical Congress, at Lisbon, on Thyreoid Tissue Implantation. He found that in some recent cases the transplanted pieces not only did not undergo degeneration, but actually hypertrophied, contracting adhesions with newly formed tissue, so as to take on all the characters of normal glands. One case of myxedema, after two operations, was completely cured in the course of three months. Christian has also applied this method to the treatment of cretinism with asserted good results. The younger the patient, the better was the result. In addition to these two diseases, he applied the same method of treatment to allied conditions, such as dwarfing, inability to walk at three or four years of age, delayed dentition, defective speech, obesity, personal untidiness; and in all cases the transplantation of thyreoid tissue manifested a favorable influence. He observed children in a few months to grow ten centimeters in height, the teeth erupted rapidly, and those who could not speak a

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(1) Wiener klin. Rundschau, Aug. 12, 1906.

single word at the time of the operation, shortly afterward began to talk a little, and in a year's time spoke fluently. The results, on the whole, of thyreoid implantation are, therefore, quite satisfactory, not only from the immediate effects, but also in regard to the permanence of the improvement.

Thyreoiodin. Rivière[1] presented a case of a man 57 years of age, who entered Jaboulay's service for a voluminous goiter of four years' duration. It involved both lobes and extended down over the sternum. Compression symptoms were present and surgical intervention was apparently necessary, especially as it was feared that neoplastic degeneration had begun. He was tentatively given two tablets daily of thyreoiodin of 0.5 gram per day. Under this treatment the tumor progressively diminished until it had lost three-fourths of its volume in fifteen days, when the remedy was stopped. Two months later the improvement was still maintained.

Triferrin. Triferrin has proven very useful in the different anemic conditions since it was introduced by E. Salkowski, in 1900, writes E. Toff,[2] specialist for diseases in children, Braila, Roumania. There are, however, no records of its use in pediatrics, though it would seem particularly adapted for children, owing to the fact that it is non-poisonous and does not affect the appetite or the bowels.

The value of triferrin depends on the large amount of iron (21.87 per cent.) and phosphorus in organic combination (2.55 per cent.) present, hence it is particularly indicated in those cases of anemia where there is deficient formation of bone. The phosphorus also increases the assimilation of albumin. Triferrin is a brownish-red powder, insoluble in water and dilute acids; readily soluble in dilute alkalies. It therefore, does not dissolve before it reaches the intestines, and hence does not irritate the stomach.

Matzner, stimulated by his researches on rabbits and chickens, employed the drug extensively in children. As a rule, three tablets, each containing 5 gr. of triferrin, were given and were readily taken.

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(1) Lyon méd., Feb. 3, 1907.
(2) Centralb. f. Kinderheilkunde, 1906, No. 6.

Triferrol, an aromatic elixir of triferrin, was also administered without trouble. One boy, aged 4, accidentally swallowed more than 60 tablets without any other symptoms except black stools, showing that the drug is not in the least toxic. Rachitic and anemic children rapidly improve with triferrin. A rachitic child suffering from attacks of infantile eclampsia showed no more convulsions after a treatment lasting four weeks.

Good results were also seen in convalescence after scarlet fever, measles, severe diseases of childhood, diphtheria, bronchopneumonia. The appetite and general strength return more rapidly and the weight increases quicker than without the drug. Though the value of blood counts is not so great in children as in adults, an increase of 55 to 80 per cent. of hemoglobin and of 3,600,000 to 5,100,000 red cells was seen in a case of hereditary lues. Marked improvement was also observed in lymphatic and scrofulous children. One patient was completely cured in four months. The drug was also found of great value in increasing the amount of milk in nursing women.

Tropacocain. Schwarz[1] reports 3,000 cases of spinal anesthesia with tropacocain. Personally he has used it in 1,000 administrations without serious untoward effects. The headache and nausea following this form of anesthesia are no greater than that after simple spinal puncture or ordinary inhalation anesthesia.

The tropacocain, according to his method, is placed in the glass barrel of a sterile syringe and dissolved in the spinal fluid which is drawn from the canal. No water is added, nor is any air injected.

His dosage varies. In operations on the legs and perineum three-fourths of a grain suffices, while in abdominal cases one grain is used. Old age is not a contraindication, but Schwarz does not believe that spinal anesthesia is advisable in children under fourteen years of age.

Schwarz increases the anesthetic area by elevating the pelvis after the injection and not by increasing the dosage of tropacocain.

Turnip-Tops. C. Wilson and H. E. Pressly,[2] Birming-

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(1) Presse Méd.
(2) Jour. Am. Med. Assoc., March 9, 1907.

ham, Ala., report six cases, four of chronic diarrhea and two of amebic dysentery, microscopically diagnosed, which were successfully treated with a diet of "greens" composed of turnip tops. One of these patients, on going where the diet was not to be had, suffered a relapse and died, the others continued well. Other vegetables, such as mustard, phytolacca and spinach, are also mentioned as having been used to some extent. The attention of the authors was first called to the remedy by the recovery of an apparently hopeless case on "poke salad" (phytolacca) after leaving their care. Of the two cases of amebic dysentery, one patient had tried all the ordinary remdies and was ready to undergo an appendicostomy or an enterostomy if it would relieve him, as his condition was extreme. The other was not so bad, but had given up his work and never expected to be able to take it up. Both made good recoveries under the "turnip greens" diet. Wilson and Pressly have also tried it in two cases of well-defined gastric ulcer, in one successfully. The other patient was nearly moribund, and while he was able to take the diet better than anything else, it failed to save him. The method of cooking is important, as it is very unpalatable if not properly prepared. As prepared as a domestic dish in the south, ordinary bacon is used, boiled half an hour, and then the turnip tops, spinach, mustard or phytolacca tops are added and allowed to boil from one to two hours.

Vaccine. Gram, registrar of the Buffalo Health Department, having noticed the decided influence of vaccine in *influenza,* has done some experimentation along the line. In Buffalo a fierce epidemic of grippe had been raging, and at the same time the health officers were carrying on a general vaccination. Dr. Gram noticed that, in those affected, the grippe disappeared simultaneously with the manifestations of the vaccination. He then experimented on himself and others having the disease, and found invariably that the attack was aborted and the patient left free from the usual consequent debility and other distressing sequelæ.

Veronal. The already large literature on veronal is still further increased by a number of articles, many of which agree in pronouncing this remedy a valuable addition tc our list of hypnotic drugs. According to J. Stein,[1] Kaiserin Elizabeth Allgemeinen Krakenhause in Saaz, veronal is particularly indicated in two classes of patients —*neurasthenics, hysterics* and convalescents, who are much run down by lack of sleep, and those who are exhausted by some incurable disease such as tuberculosis, pulmonary emphysema, and chronic endocarditis. Usually small doses will suffice to bring about a natural sleep, lasting five to six hours—0.3 to 0.5 gm. (5 to 7½ gr.) given in warm tea. Bad after-effects were never noticed. The drug is also excellent in quieting the patients after operations.

In Psychic Disturbances. F. Proells[2] has tried veronal in psychic disturbances, where opium in large doses was formerly used, and reports very good results. In surgical cases, morphin cannot be dispensed with, yet veronal will bring about a restful condition of the mind and body which will favor healing even though it does not abolish pain. Though the drug has been used generally for over a year, not a single case of veronal habit has been reported.

Producing Eruption. W. House,[3] of Portland, Ore., reports the effects of a 15 gr. dose of veronal given to induce sleep in a case of mild melancholia. An erysipelatous appearing eruption covered the back of the thorax and the front of the body, and the arms and legs presented a series of blotches, about an inch apart, resembling severe bee stings or spider bites. There was also stupor and vertigo, marked fever, and toxemic symptoms. These, with the eruption, gradually disappeared in a day or two, leaving only small petechiæ. The patient stated that he had had similar symptoms before from a dose of veronal, and his former physician confirmed this. In a considerable experience with the drug, the author had previously had no unpleasant effects other than vertigo, nor had he ever seen so extensive a drug eruption in any other case. He has used veronal repeatedly in 15 gr. doses for insomnia. In subacute mania he has given 10 gr. every three hours, and in acute alcoholism has even given single doses of 20 gr. He never witnessed unpleasant effects, except vertigo, until the case recorded came under his observation.

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(1) Prag. med. Woch., XXIX, Nos. 41-42.
(2) Therap. Monatsch., February, 1905.
(3) Jour. Am. Med. Assoc., April 20, 1907.

Compared with Trional. An interesting observation is recorded by L. L'hoest.[1] While trional acted well in 72 per cent. of cases, veronal gave relief in as high as 90 per cent., and hence the author thinks that veronal may soon be destined to replace all other hypnotics with the exception of morphin.

Vinegar. Gilly[2] reminds obstetricians that in every cottage there is a valuable *hemostatic* which can be utilized in an emergency. A pint of vinegar, a tablespoonful of table salt, and a couple of clean handkerchiefs are always at hand. In a profuse hemorrhage following a miscarriage or after labor, the patient is made to drink half a glassful of pure vinegar, and the vagina is tamponed with the handkerchief moistened with the vinegar and salt. This is done with the patient in the obstetrical position lying across the bed with her head low, the thighs and legs strongly flexed, and the hips at the edge of the bed. The vagina is cleared of clots before introducing the tampon. The bleeding stops immediately, but the patient is kept for a time in this position until reaction takes place, which is hastened by an enema of a quart of physiologic salt solution. The simultaneous internal administration of vinegar by the mouth, he regards as an important aid to the local hemostatic. This agent, although having a flora of its own, is known to be bactericidal to pathogenic varieties of microörganisms. It may be given in its ordinary state, or, if there is time, it may be filtered and boiled previous to use.

Water-Drinking. E. F. Cushing and T. W. Clarkie[3] say that large quantities of water internally, a gallon or more in twenty-four hours, may easily be taken by *typhoid fever* patients, if administered in small quantities at frequent and definite intervals. A copious elimination of watery urine at once follows, the degree of polyuria day by day closely corresponding to the quantity of fluid ingested. Patients are more comfortable by this mode of treatment, and toxic nervous symptoms are lessened. The mortality as well as the severity of typhoid fever seems to be still further diminished by this method of hydrotherapy

(1) Ann. d. I. Soc. Med.-Chirurg. de Liege, November, 1904.
(2) Echo med. de Cevennes, 1905; Gaz. de gynecol., Jan. 15, 1907.
(3) Amer. Jour. of Med. Sci., February, 1

employed as an accessory to the cool-bath treatment of the disease.

Water Injections. J. Rawson Pennington,[1] of Chicago, in selected cases, has used physiologic salt solution and sterile water for local analgesia in minor rectal operations. Following the suggestion of Heinze, of Dresden, he has used physiologic salt solution instead of pure water to avoid the irritation sometimes caused by the latter. In some cases, he has added eucain lactate and adrenalin to intensify and to prolong the analgesia. He also has had tests made to determine the influence of such solutions on normal tissues, and finds that when isotonic with the blood the best effects are produced. He gives a formula and method of making up the solutions. He has employed them in operations for various types of hemorrhoids, polypi, anal prolapse, fissure, fistula, ulcerations, abscesses, sacral dermoids, lipomas, condylomas and secondary operations for colostomy. He has operated altogether in about 75 cases with local analgesia, and the pain has been usually less than under general anesthesia. He considers the method described as a valuable advance, enabling patients to receive treatment at home or at the physician's office in many cases, and without interruption to ordinary occupations and business, instead of going to a hospital, being laid up and losing many days or even weeks of time.

Zinc Chlorid. P. Broese[2] deals with the *protection of aseptic wounds* against infection with virulent bacteria by the scab produced by cauterizing with chlorid of zinc. It has been shown that chlorid of zinc has practically no disinfecting action at all. Its cauterizing action is, however, particularly intense, the chief characteristic being its power of penetrating into the deeper layers of tissue. After convincing himself that this want of disinfecting power is true, he inquired into the actual behavior of aseptic wounds which had been treated with the drug and infected. Normal aseptic wounds when infected by various pathogenic bacteria very rapidly absorbed them, as has been shown by numerous experiments. Broese used rabbits, and infected them with bird cholera bacilli and with an-

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(1) Jour. Am. Med. Assoc., April 8.
(2) British Med. Jour., April 1, 1905.

thrax. The ear was shaved, a pocket-like wound was made by means of scissors sterilized in the flame, and this pocket was then cauterized with a 50 per cent. solution of chlorid of zinc. Into the pocket two or three loopfuls of the culture were placed, and the pocket was then closed completely with collodion. It appears from the experiment that the scab of chlorid of zinc is capable of entirely protecting from infection with cholera or anthrax, while the same dose applied in the same way without the cauterization always killed. Further, he found that if the cauterization was carried out within one minute after the infection, the animal did not become infected. For periods longer than one minute the protection appears to be negative. The scab itself is not a nutrient medium for bacteria, as he could show that on the second or third day, when the collodion was removed, the pocket was found to be sterile. It is strange that a substance which is not a disinfectant should by virtue of its power of combining with albumin be able to protect the organism from infection with virulent bacteria

PREVENTIVE MEDICINE.

HENRY B. FAVILL, A. B., M. D.

PREVENTIVE MEDICINE.

TUBERCULOSIS.

The literature on the prevention of tuberculosis continues to present the same general recommendations that have been given in former years. The close association of the prophylaxis of tuberculosis with other hygienic problems, especially with the condition of the dwelling and the food supply as well as the economic relations of its victims, makes its prevention a peculiarly complex question. Attention is no longer to be fixed mainly on the opportunities for direct contagion, but the factors favoring the acquiring of the disease must be taken into consideration. While the dictum "no spit, no consumption" may be true, a condition of society might exist in which the sputum of consumptives would be relatively harmless because of the strong resisting power of the members of the community against the disease. The investigations into the relations of the opsonic index in tuberculosis and other infections promise to give us a means of determining the resisting power of individuals against such diseases and its application to persons under varying circumstances may assist in determining the conditions under which resistance against these diseases is increased and may also furnish the sanitarian with a test by which it may be determined whether it is safe for individuals to expose themselves to risks of taking tuberculosis.

Municipal Control. The action of the municipality in the control of tuberculosis should be quite as extensive as in the treatment of epidemics or other infectious diseases. It must logically begin with notification of cases since it is impossible for the health board to institute any suitable measures for the restriction of the disease without some means of knowing where the sources of public danger are situated. Notification has been established as a voluntary matter in various communities; it is required as a matter of law in New York and some other cities. The institution of compulsory notification is exciting considerable discussion in England. It is urged that a trial of notification as a voluntary requirement should first be made. This would seem to be unnecessary in view of the fact that it has already been tried in other communities. The legal requirement of notification is not designed to restrict the liberty of the patient, and it is only fair to the progressive members of the medical profession that those who do not appreciate the necessity of this measure should be required by law to lend their aid to the efforts to stamp out the plague. R. Sinclair(1) discusses the method of notification and says that most are agreed that some form of notification should be adopted, but the question is whether it should be compulsory or voluntary. He advocates a plan submitted by Dr. Charles Templeman, which includes three steps: (1) Voluntary notification; (2) a central dispensary; (3) a provision for the isolation of advanced cases.

R. W. Philip,(2) of Edinburgh, advocates the following plan, which he says is being carried out in Edinburgh, compulsory notification having been established there since March 1, 1907. His scheme includes: 1. Compulsory notification, which he regards as the basis of a rational solution of the tuberculosis problem. 2. A place for the reception and disposal of cases of which he gives the functions in detail. 3. A hospital for advanced cases which should be established more for the purpose of preventing the spread of infection than for the simple care of the patients. 4. A sanatorium for the treatment and cure of selected cases. 5. A colony for the reception and supervision of such cases as have had their disease arrested in the sanatorium or in which it is latent from the beginning.

A. James(3) contrasts the course of phthisis, while not subject to notification, with that of typhoid fever, diphtheria, scarlet fever and measles both before and after notification was required. The results were obtained from Edinburgh, Dundee and Aberdeen. From this comparison it appears that the mortality of phthisis shows a very distinct and marked diminution due to the gradual and progressive improvement in the conditions of life. Typhoid fever shows also a gradual improvement, but not so marked as with phthisis. The chart does not seem to indicate that notification has intensified this improvement. The same is true of diphtheria. In regard to scarlet fever the indications are that notification has produced improvement. In regard to measles it appears that after notification and efforts to stamp the disease out the mortality has not only not diminished but has actually increased.

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(1) Lancet, July 21, 1906.
(2) British Med. Jour., Dec. 1, 1906.
(3) Scottish Med. and Surg. Jour., February, 1907.

Such being the results of notification and of efforts to stamp out diseases which are admittedly mainly due to the entrance into the body of germs, what now is to be expected of a similar notification and effort to stamp out the germ in the case of pulmonary phthisis? The author calls attention to the differences between phthisis and the other infectious diseases. He believes that the germ of tuberculosis becomes virulent only under favorable conditions. He also notes the fact that the germ of tuberculosis may exist in the body and never do harm unless the individual gets into a lowered state of health. The efforts made to treat pulmonary phthisis by combating the germ in the manner in which such truly infectious diseases as rabies, diphtheria and tetanus are treated have been found to be not only useless but disastrous. He therefore opposes compulsory notification.

W. H. Baldwin[1] has investigated the status of compulsory reports and registration of tuberculosis in the United States and has compiled a table showing that such reports are required in 53 out of 86 cities which were investigated. The total population of the 86 cities was 17,270,126. The 53 which require reports had a population of 14,030,381, or 81.2 per cent. of the total. It appears that the sentiment in favor of compulsory reports and registration is growing rapidly and the objections at first made are not sustained by more extended experience.

J. B. Nichols,[2] however, objects to the conclusion that the requirement of registration has produced a diminution

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(1) New York Med. Jour., Dec. 8, 1906.
(2) Med. Record, Nov. 3, 1906.

in the number of deaths from tuberculosis and shows that there was a much larger decline of the death rate from tuberculosis in New York City before the introduction of the Health Department measures than has taken place since. In Buffalo the death rate has actually increased since the establishment of registration. The decline in New York is not particularly greater than that which has taken place throughout the registration area of the United States.

Some thoughts on compulsory notification of phthisis are contributed by a general practitioner in Edinburgh. While holding that notification of phthisis is most desirable, he objects to compulsory notification for the following reasons:

1. Difficulties of diagnosis. Even bacilli staining like the tubercle bacilli may not indicate phthisis. Therefore he holds that until specialists can give us a diagnostic sign whereby we can detect phthisis without mistake in the early stages this wholesale scheme of compulsory notification should not be adopted.
2. It will too greatly intensify the public fear of the infectivity of phthisis.
3. It is much too wholesale a scheme. Many cases need never be reported.
4. The powers desired by the local authorities are far too arbitrary and might become a decided interference with personal liberty, while probably increasing the taxes enormously.

Dr. Cullen[2] replies to these objections:

1. The difficulty of diagnosis applies only to early treatment in a sanatorium, but is of no interest to the local authorities. What they want to know are the infective cases; that is, those that have tubercle bacilli in the sputum.
2. The education of the public will obviate the too great fear of the infectivity of the disease, since they will soon learn that it is not the consumptive but his sputum that constitutes the danger.

The Tuberculosis Dispensary. This has been described as a sort of central bureau which shall act for the re-

(1) Scott. Med. and Surg. Jour., January, 1907.

ception of patients, giving them temporary care, investigating their home conditions, providing, if necessary, food and medicines, and directing them to sanatorium or hospital, as is best for the individual case. Philip[1] thus describes the functions of the tuberculosis dispensary: The tuberculosis dispensary should be, for every city or district, the uniting point of all other agencies. It should not be an isolated institution but form an integral part; indeed, the center of a great network of operations. To the dispensary tuberculous patients of the poorer classes and patients with chronic colds or persistent ill health should be invited. Tuberculous patients presenting themselves at infirmaries, hospitals and other charitable institutions should be directed to the tuberculosis dispensary. Employers of labor and heads of public works should be apprised of the existence of the dispensary, so that invalid employés may be directed thither. The public should be made aware that the dispensary is prepared to answer all inquiries regarding tuberculosis and to advise in a given case what is best to be done. The dispensary should constitute a center for the dissemination, in the widest fashion, of information regarding prevention and treatment.

E. O. Otis[2] believes that research work, the investigation of methods of treatment, the collection of statistics and the study of various social problems in connection with the disease likewise find a legitimate field and a favorable opportunity in the tuberculosis dispensary. But little and simple equipment is absolutely necessary for the establishment of the dispensary, which is within the reach and means of almost any community. A room or two, or even the physician's office, can be utilized for accommodations, or a complete building erected for the special purpose with more extensive space, as is the case with the Lille dispensary and others.

The Hospital. A hospital provided for acute cases of tuberculosis and a hospital or asylum for dying patients seem to be essential parts of any scheme for the prevention of tuberculosis by municipal action. There can be no doubt, says R. W. Philip,[3] that these patients are the

(1) New York. Med. Jour., Nov. 24, 1906.
(2) Jour. Am. Med. Assoc., Dec. 20, 1906.
(3) Brit. Med. Jour., Dec. 1, 1906.

greatest source of infection. This is most especially true in the case of those affected by the disease while resident in the contracted dwellings of the poor, where perhaps an entire family share a room with the consumptive patient. All such patients require immediate removal to a hospital reserved for advanced and dying cases of consumption.

W. M. L. Coplin,[1] L. F. Flick[2] and W. N. Beggs[3] emphasize the importance of hospitals for tuberculosis. Tuberculosis sanatoria are of importance in the control of this disease from their educative influence and from the fact that by the prompt treatment of early cases they may prevent the development of the more advanced forms of the disease which constitute the most important sources of infection. The literature of the tuberculosis sanatoria can merely be mentioned. They are recommended by Philip, Coplin, B. Bramwell,[4] G. W. Holden,[5] Flick, C. H. Garland and T. D. Lister,[6] S. G. Dickson,[7] D. D. Grout[8] and H. M. King,[9] W. M. Bayliss.[10]

Colonies. Not less important than the sanatoria are colonies where the convalescent patient discharged from the sanatorium can be employed at light work in sanitary surroundings and enabled to recover fully—a thing which seldom happens from mere sanatorium treatment. Such colonies should be established near the larger cities and should give opportunity not only for the observation and care of those who have been in the sanatoria but also of patients who are on the borderland of tuberculosis and are threatened by their home surroundings or by their occupation. The tuberculosis camps established in the forests of Pennsylvania may form a model for the administration of such colonies. Philip is of the opinion that such colonies could be made practically self-supporting. Much of the product of the industries of the colony could be used to supply the needs of the sanatorium. In the neighborhood of the larger cities horticulture could be followed

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(1) Am. Med., July, 1906.
(2) New York Med. Jour., March 23, 1907.
(3) Jour. Am. Med. Assoc., Jan. 26, 1907.
(4) Scott. Med. and Surg. Jour., January, 1907.
(5) Jour. Am. Med. Assoc., Jan. 19, 1907.
(6) Lancet, March 9, 1907.
(7) Brit. Med. Jour., Sept. 15, 1906.
(8) Medical Age, July 10, 1906.
(9) Med. Record, Dec. 15, 1906.
(10) Jour. Missouri State Med. Assoc., December, 1906.

with profit, while in the forests unlimited opportunity for various forms of manufacture from wood would be afforded. Philip gives the accompanying diagram (Fig. 1)

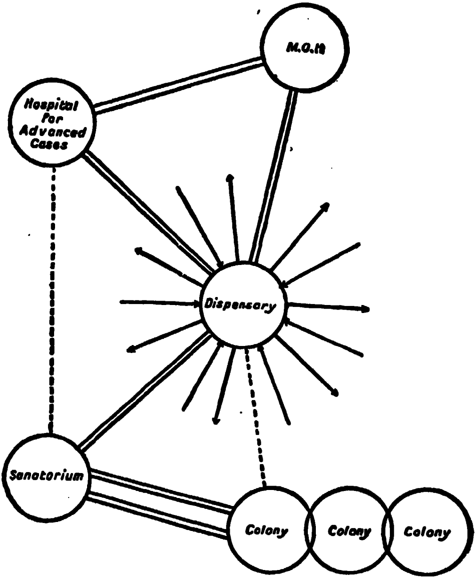

Fig. 1. Diagrammatic scheme showing relation of Public Health Department to anti-tuberculosis organization.

indicating the relation of the various departments of municipal activity in the control of tuberculosis. The scheme is completed by a supervision of tenements, factories, etc., the suppression of alcoholism, sanitary education of children and of the people in general by which they may be taught to avoid the causes of the disease and disinfection of premises during the course of the disease in some cases, and especially after removal or death.

Garland and Lister enumerate some of the reasons why the establishment of colonies in Germany was unsuccessful. The number of convalescents who took advantage of the colony was very small. This is accounted for as follows: (a) The discharged patients who are married believe, when they are thought capable of working, that they must, in the interest of their families, go back to their trade; (b) those unmarried fear to change the pleasant life of the town for the isolated existence of an agricultural worker; (c) most of the patients will not understand that the food at the farm colony must be different to that at a sanatorium; and (d) compulsory work is not liked.

The authors, however, believe that these objections can be overcome. They suggest a graduation of employment from light tasks at the sanatorium to full time employment in the colony and recommend care for the recreation of patients so that they will not feel the isolation so much. If the colony were situated near a large city with good transportation, the patient might still go to his work at his trade and the family might be brought to live in the vicinity of the colony. Patients pursuing insanitary occupations should be induced to change their employment.

M. S. Paterson and F. C. Shrubsall[1] in discussing the future of consumptive workmen express the following conclusion: So far as possible each individual should return to his own trade and those without a trade should be largely governed in the selection of an occupation by their wage-earning capacity thereat. If the only result of the treatment of pulmonary tuberculosis be the production of large numbers of unskilled outdoor laborers can this be considered an economic success.

Prisons and Reformatories. S. A. Knopf[2] discusses the tuberculosis problem in prisons and reformatories. In these institutions, which are directly under the control of the state, the mortality from tuberculosis is on the average three times higher than among the population outside of penal institutions. The author concludes that the majority of tuberculous prisoners have not become predisposed to tuberculosis in prison, neither have the majority contracted tuberculosis during prison life. The surroundings of their early life and the vicissitudes of their criminal career are responsible for the prevalence of infection. The author recommends the separation of tuberculous prisoners and discusses the propriety of using tuberculin for the diagnosis. He is opposed to this on the ground of its uncertainty and danger.

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(1) Lancet, July 28, 1906.
(2) New York Med. Jour., Nov. 17, 1906.

The prevention of tuberculosis in prisons and reformatories must begin in the detention prison. In many of these institutions the life and surroundings of the prisoner are not favorable to good health. Prisoners awaiting trial stay in the Tombs sometimes six months and longer. They are not occupied with anything. They are allowed to exercise in the open air only once a week and for about an hour and a half. The author recommends that no prisoner should be detained for trial longer than four weeks, unless it be in the interest of justice. Whenever practicable even detention prisoners should be occupied with something useful and health-sustaining. A sufficient amount of exercise should be given daily. In prisons strict rules for the disposal of sputum should be enforced and the prisoners should be provided with approved cups and other receivers for the sputum. Other hygienic matters should be carefully attended to. The author believes that one predisposing factor to tuberculosis in prisons is overwork. The prisoners lack the exhilarating influence of freedom of action and the superior hygiene which the free worker enjoys. The influence of the prison physician and other authorities should be exerted to induce prisoners to adopt a country life on their release from prison.

The Antispitting Crusade. C. Denison[1] believes that the crusade against spitting has brought the matter of infection so prominently before the public as to obscure the importance of other and perhaps more important causes. Some of these he classifies as follows: 1. Heredity, which is increased in force by the fact that modern medical science has preserved many lives of persons who transmit tendencies to disease to their offspring. 2. The present civilization stimulates the intellectual and nervous system to the injury of the physical (reproductive powers) and to the favoring of sterility. 3. The social, commercial and manufacturing phases of our civilization favor indoor and inactive modes of life which are detrimental to successful physical development. 4. The employment of women removes from the probability if not the possibility of successful motherhood a great number of the women fittest for maternity.

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(1) Am. Med., July, 1906.

He recommends investigation of the sanitary needs of tenements, schools, factories, public buildings and homes as the basis of future legislation which should control the matter of building to a greater degree than at present. Competent education should be provided for the young on the laws of health, and before marriage on the healthful selection of mates and the baneful results of bad heredity.

Transportation. John R. Haynes[1] discusses the duty of railroads in the transportation of tuberculous passengers. He cites instances which forcibly illustrate the danger of the transmission of tuberculosis by the occupancy of berths in sleeping cars by tuberculous patients. He suggests as a remedy for these conditions that the ticket agent should ask of those about to make long distance journeys, Do you cough? If the reply is in the affirmative, then the would-be passenger must bring a certificate from the health department or, if there is no health department, from a reputable physician, stating the cause of the cough. Tuberculous patients should be transported by special cars, which should run at specified times. These cars should be compartment cars, provided with conveniences for the disposal of sputum, etc., and should carry a trained nurse, whose business it would be to care for all who needed her attention. The car could be disinfected at the end of the journey. For short journeys a portion of a car could be set apart, like the smoking compartments of the baggage car, for instance, without upholstery. The author has submitted these suggestions to the passenger agents of two large continental lines, and they declared them practicable and feasible, provided the various state health authorities or boards place tuberculosis on the list of contagious diseases.

The Tuberculo-Opsonic Index. The recent study of the opsonic index in connection with tuberculosis indicates the possibility that we have in this method a means of detecting special susceptibility to tuberculosis. The so-called pre-tuberculous conditions and the diathesis which is supposed to mark the predisposition to acquire the disease deserve especial study. It is of especial interest that the tuberculous type of chest appears to be identical with the Stiller type of body in which gastroptosis and neurasthenia

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(1) Jour. Am. Med. Assoc., Jan. 19, 1907.

so readily develop. A recent author has suggested that this narrow thorax which is so commonly found among the victims of phthisis is in reality the result of the yielding of the abdominal walls and the prolapse of the abdominal viscera. These observations suggest the need of more careful supervision of the form taken by the development of children, which, if it cannot be modified, may warn the parents and physician of the likelihood of the subsequent development of tuberculosis.

TYPHOID FEVER.

Bacilli Carriers. The dissemination of typhoid fever by the so-called bacilli carriers—that is, by persons who harbor the bacilli of typhoid without themselves presenting any symptoms of the disease—indicates a reason for unusual diligence in the examination of the excreta of persons convalescing from this disease. The investigations showed in an asylum containing 250 persons seven carriers of the bacillus, and J. H. M. A. von Tiling[1] estimates that one-half of one per cent. of people harbor the bacilli. The danger of contamination of water and sewage, as well as of milk and other articles of food, is therefore very great. Von Tiling says: "Each typhoid patient must be the principal object in the fight against the spread of typhoid fever. Each typhoid fever case is, in one way or another, traceable to a previous typhoid fever case. We must try to recognize each typhoid fever patient as early as possible and we must prevent all his bacilli from spreading and infecting others."

The early diagnosis of the disease is important and can best be accomplished by the examination of a few drops of blood by Conradi's method. As this method is tedious for the ordinary practitioner, laboratory assistance should be afforded by the health authorities, so that the nature of every case may be satisfactorily ascertained. The determination of the point at which such a patient ceases to be a danger to his environment must be determined by examination of the excreta and this can be accomplished only by considerable labor that is directly in the interest of the public health and for which no compensation can be ex-

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(1) Albany Med. Annals, April, 1907.

pected from the patient, so that it should be done at the public expense.

G. A. Soper[1] reports the case of a cook who could be definitely connected with seven outbreaks of typhoid fever occurring in families in which she worked. Only a portion of her history for the last ten years could be traced, but everywhere that she worked during that time typhoid fever followed her. The outbreaks occurred in from ten days to a few weeks after the cook arrived and ceased after she left. The infection appeared to be conveyed through the food and affected in all 26 cases, with one death. Examination of the urine was negative, but the feces showed large numbers of typhoid bacilli.

Water Supply. That many cases of typhoid are wrongly diagnosticated as malarial is indicated by a consideration of the health records of towns lying along the Hudson river. F. J. Mann[2] says: "When Albany and Schenectady largely cut out their typhoid by introducing pure water the so-called malarial deaths also disappeared." The public water supply is not the only one to be scrutinized in searching for the origin of typhoid. D. J. Hoyt[2] calls attention to the probability of well water being the source of typhoid in some cases, although it is difficult or impossible to demonstrate the presence of the typhoid bacillus in the water. He cites several cases in which such a source of the disease is probable, and in which, although the bacillus could not be found, the chemical examination of the water showed a high grade of contamination. R. W. C. Pierce and J. C. Thresh[3] have demonstrated the typhoid bacillus, or a closely related organism, in some distilled water which was used by a man attacked with typhoid fever. The bottle containing the water had formerly been sent to a town where typhoid fever was prevalent, and after its return had been steamed and refilled. The steaming appears to have been insufficient to secure thorough sterilization.

L. H. Marks[2] calls attention to contaminated milk as a source of infection, citing several of the striking instances in which the disease has been conveyed to numbers of people in this way.. The principles of epidemiology as

(1) Jour. Am. Med. Assoc., Jan. 15, 1907.
(2) Albany Medical Annals, April, 1907.
(3) Lancet, Sept. 8, 1906.

applied to typhoid fever in Minnesota are elucidated by H. W. Hill.[1] He says briefly: "Typhoid fever is contracted only by the mouth; hence, *watch the mouth.*" Scranton, Pa., has recently had an epidemic of typhoid fever affecting about 1 per cent. of the population which was traced to contaminated water from one particular district, the Elmhurst reservoir. According to J. M. Wainwright,[2] the exclusion of this source of supply was followed by a rather prompt abatement of the epidemic.

Wine as a Prophylactic. P. Carls[3] refers to the investigations of Sabrazes and Marcandier, which have shown the fact that wines possess a bactericidal power for the bacillus of typhoid fever. They demonstrated that this power was due mainly to the acidity and but little influenced by the alcoholic strength. Carls cites the experience of certain officers in Africa who found they could avoid infection by the fevers of the country, which were transmitted by water, by substituting as their beverage a glass of hot wine or *vin a la francaise.* The composition of these beverages is similar, the one being drunk cold, while the other has been heated sufficiently to expel a part of its alcohol and is drunk hot. To the wines are added cannella and lemon juice. The cannella is the most antiseptic of all substances of its class and has a bactericidal power substantially the same as that of sulphate of copper. The citric acid of the lemon juice is also the organic acid which, with an equal degree of acidity, is best tolerated by our gastrointestinal tract. The author concludes that these beverages should be better known in cities where the water is of doubtful quality. They are to be recommended in the country and especially in the colonies during the summer. No efficacious remedy was more agreeable than these drinks.

MALARIA.

H. Berger[4] calls attention to some of the subsidiary circumstances that favor the occurrence of malaria. The conditions on board ship he thinks are favorable to the life of the mosquitoes, in that the warmth of the staterooms

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(1) Jour. Minnesota State Med. Assoc., Oct. 15, 1906.
(2) New York Med. Jour., Feb. 9, 1907.
(3) Jour. de Med. de Bordeaux, June 16, 1907.
(4) Therap. Monats., March, 1907.

furnishes very favorable conditions for the existence of mosquitoes. The author traveled from Panama to Hamburg on a ship of the Hamburg-American line and returned to the West Indies on the same ship. In the port at Hamburg the ship was disinfected, and yet upon the return voyage the passengers were much troubled with mosquitoes. This continued until the staterooms were painted. This brought many living mosquitoes to light, and the officers of the ship decided that these mosquitoes were of a different kind from those native to Hamburg, and probably had survived the disinfection. The author believes that a drying room for clothing would be of very great service on ships which go into the tropics. In addition he advises periodic cleaning and disinfection of all the ship rooms. The author believes that clean and dry clothing is of very great prophylactic value. Anxiety appears to favor the onset of the disease and he thinks that the immunity of the black race depends largely upon the greater activity of the skin, and the reason why imported negroes do not show the same immunity as the natives appears to be because their skin has not acquired an activity corresponding to the climate.

Prophylaxis. P'Just Navarre[1] sums up the prophylaxis of malaria as founded entirely on the doctrine of the communication by anopheles in the following five propositions: (1) Destruction of winged mosquitoes; (2) protection of men against their bites; (3) destruction of their larvæ; (4) destruction of the hematozoa in the blood of malarial patients (healing by quinin); (5) prophylaxis by quinin with the obtaining of a refractory condition as much by the specific as by a better individual hygiene. The author believes these means, while entirely rational and legitimate, are for the most part impracticable and difficult to impose on the masses. The author believes that the only practical prophylaxis of malaria is the indirect means which results from the improvement of the general sanitary condition of the country. Drainage, culture of the ground, clearing of brooks and rivers, etc., are certain means of hindering the multiplication of mosquitoes, and they are also the only ones that for a long time the people can be made to accept, especially when it is demonstrated to them not by conferences but by facts that these methods are consistent with their material interests.

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(1) Lyon Médicale, Feb. 17, 1907.

Economic Importance. R. Ross[1] describes his investigations of malaria in Greece, which he found endemic among the children, and affecting also a large number of adults. He finds the average number affected about 32 per cent. of the population. The cause is the considerable number of pools in which anopheles can breed. He attributes the downfall of Greece from her position of independence and national prominence more to the insidious sapping of her energies by malaria than to the action of foreign enemies. The influence of malaria and other endemic disease on the course of history has been very insufficiently studied; in fact, few historians have given it any consideration whatever. Gorgas[2] suggests that by the conquest of yellow fever and malaria it will be possible for white men to live in the tropics, and that the course of empire will be southward, where the natural reward of labor is greater than in the north. Ross thinks screening the windows and doors impracticable for the poor people, and that general cinchonization will be resisted by the parents, but he believes that the disease can be conquered by destroying the breeding places of the insects by drainage. This measure will make Greece a safe and desirable place for the tourist to visit, which is not now the case, in spite of the beauty of her scenery and the interest of her history.

YELLOW FEVER.

Since the resumption of American control over Cuba, yellow fever has disappeared as during the previous American occupation. The disease has been banished from the Canal zone by the same methods which secured control of it in Cuba. C. Faget[3] endeavors to show that there is an essential difference between contagion and infection and that yellow fever is due to infection. His view is that the infection resides in a place and may be transported from one place to another by ships, baggage, etc., and that is the way in which the disease is propagated. He gives little or

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(1) Lancet, Nov. 17, 1906.
(2) Jour. Am. Med. Assoc., July 6, 1907.
(3) New Orleans Med. and Surg. Jour., October, 1906.

no credit to the mosquito as the agent of transmission. It is not probable that this argument will have much weight against the demonstration of the truth of the mosquito theory derived from the results of preventive measures based on that theory. Gorgas believes that mistake is made by attempting the destruction of the infected mosquitoes only; attention should be directed against the stegomyia as a whole instead of the infected individuals only. F. R. Bernard[1] is not of the opinion that modern methods stamp out the disease. Beyond all question it modifies and controls the death rate. He states, however, that such epidemics die down in winter because the insects seek their winter quarters, but he believes that they are able to live over the winter and may bring on the disease in the spring.

PLAGUE.

N. K. Foster[2] points out the danger of the spread of plague in American cities and urges that steps be taken to meet it. His experience in California leads him to believe that the disease is spread almost wholly by means of animals, of which the rat is the chief but not the only one. He cites one instance in which the disease was probably conveyed by squirrels. While filth is not the immediate cause of the disease, it is possible that the germ may live and multiply in it. It is not safe for any community, no matter how favorable their sanitary and other conditions may be, to depend on them for protection. Any vessel that sails the sea may become the bearer of the plague rat, and unless the utmost care is exercised that rat may land and become a center of infection. These rodents do not stay quietly in the ports of entry, but take trains for other parts, there to infect their kind and then mankind. Health authorities should not lose sight of the possibility of an outbreak of plague. Care should be taken to destroy rats as far as possible, and in the event of an approaching epidemic all rats that are found dead should be examined for the presence of plague.

J. W. Anesse[2] believes that the rat is the primary host and the flea the intermediary host, the rat dying of

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(1) New Orleans Med. and Surg. Jour., October, 1906.
(2) Jour. Amer. Med. Assoc., Feb. 23, 1907.

the plague and its coat containing numbers of fleas; these leave the dead body as soon as they possibly can and seek the nearest living body, which is usually the foot or leg of a native. W. G. Rucker[1] referred to the researches of Dr. Donald H. Currie, who investigated a number of squirrels and found that an epidemic of plague was taking place in them. This indicates the possibility of squirrels, ground-squirrels and gophers carrying the plague into the Mississippi valley, and even beyond.

G. Kobler[2] reviews the measures to be taken to prevent the spread of plague, foremost among which are to be placed the detention of infected persons and of travelers suspected of conveying the plague. The destruction of rats especially, if there is an unusual mortality among them, is of importance. Inspection of grain is of great importance especially, as it cannot be treated with a chemical disinfectant.

Prophylaxis. S. Kitasato[3] gives an account of the measures for preventing plague in Japan. As it had been observed that the plague epidemics of Japan originated in the Indian peninsula, in Southern China and Formosa, quarantines were established at the principal trading ports against vessels coming from these ports. When a ship is found to have plague infection on board all communication with land is stopped and sanitary precautions are employed and an attempt made to destroy the rats by means of auxiliary vessels especially fitted for that purpose similar to those used in Hamburg.

In case of an epidemic the following regulations are enforced:

1. Authority for disinfection, isolation, and quarantine is given. Measures looking to the prevention of the disease are to be enforced not only against the living patients and in respect to the houses and furniture occupied and used by those actually stricken with plague, as well as of those who are only suspected of having the infection, but also in regard to the bodies of those dead with plague.

2. To prevent the spread of the infection, as many rats as possible are to be killed.

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(1) Jour. Am. Med. Assoc., Feb. 23, 1907.
(2) Wien. med. Woch., Nov. 3, 1906.
(3) Interstate Med. Jour., July, 1907.

3. The period of isolation of suspected patients is not to be less than ten days.

The traps and appliances for catching the rats should be set in all buildings, and it is imperative in those containing cotton and grain, since the plague germ is most liable to be retained in them. The government of Tokyo has passed an ordinance which provides that all buildings and warehouses must be built ratproof. The author believes that this regulation should also apply to private dwellings.

The following preventive measures have been established: 1, Bacteriologic examinations; 2, search for patients; 3, killing of rats, disinfection, and the application of sanitary methods; 4, disposal of patients and of infected articles. In the cities most frequently threatened by plague the government has encouraged destruction of rats by buying all killed or captured by the people, thus preventing an epidemic and giving opportunity to discover plague in the rat before it has spread to man as each rat is examined bacteriologically by the government. By tracing the infected rat the source of infection may sometimes be found. During epidemics the physicians are given authority to examine the bodies of all persons dead of acute febrile disease to prevent overlooking many cases that would otherwise pass unnoticed.

Even during ordinary times the killing of rats is enforced in localities where imported freight is stored or where laborers live, and the enforcement is made general when there is danger of an outbreak of plague. At such a time rat catching and killing devices are distributed to every dwelling and warehouse. In buildings which can be tightly closed formalin vapor and sulphur dioxid is used. Buildings which are not ratproof are rebuilt, the sewage improved and filth burnt.

SMALLPOX AND VACCINATION.

G. Dock(1) reaches the following conclusions regarding vaccination:

1. Our present method, varying much in different states and different parts of the same states, makes certain a high

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(1) Am. Jour. Med. Sci., February, 1907.

ratio of smallpox cases, with an unduly low protection to the individual.

2. There is nothing in the fundamental law of the land to prevent the passage of safe and efficient vaccination laws.

3. Vaccination laws should aim at a widespread protection by vaccination and revaccination.

4. Compulsion should not be necessary and should by no means take the place of safe and certain vaccination. Compulsion should not be practiced in case of doubt as to the fitness of the subject by his physical condition or surroundings.

5. The operation should be a matter of permanent record, and a certificate from an authorized official should be proof of the vaccination of each individual.

6. The operators must be trained for their work, familiar with the vaccination laws, and bound to follow them.

7. The manufacture of vaccine must be controlled by competent experts; institutes for furnishing vaccine should be so placed as to make easier the distribution of virus.

8. The operation should be done at fixed times of year, when epidemic diseases are not most prevalent, in places appointed and equipped for the purpose; the subject should be examined after the operation at a time fixed by the regulations, or at once on suspicion of complication. Private vaccination should be permitted only under special conditions and the proper details should be exacted, with revision of the result by a competent health officer.

SCARLET FEVER.

Heman Spalding[1] gives the following directions for the isolation of patients with scarlet fever: The prophylaxis of scarlet fever consists in separating the sick from the well and destroying all infection emanating from the scarlet fever patient. To accomplish this all cases of scarlet fever should be reported to a responsible health officer. All cases which cannot be properly isolated at home should be taken to an isolation hospital. When the patient is taken to a hospital the premises should be disinfected and

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(1) Illinois Med. Jour., May, 1907.

the inmates now exposed kept from mingling with others for eight days. If scarlet fever is treated in the home a warning card should be placed on the front and rear doors. The card on the rear door gives warning to the milkman and is important. The patient should be placed, if possible, in a room apart from the rooms occupied by other members of the family. All doors opening into the patient's room should be covered with a sheet kept wet with a disinfecting solution. A bed sheet or one made from cheap cotton cloth should be fastened to the top of the door frame and down the hinge side of the frame, leaving the edge on the lock side free to be turned back when passing through the door. The sheet must be long enough to allow two or three inches to lie on the floor. No article of furniture—carpets, rugs, curtains, ornaments, books, etc.—except the things actually necessary for the care and comfort of the patient should be left in the sick room. If the patient is in the room to be occupied when taken sick do not move the furniture. Exclude cats, dogs and other pets, including birds, from the room, since these are liable to carry infection.

Isolation to be effective must be complete. No persons except the strictly necessary attendants should be allowed to enter the sick room. These should wear only such clothing as can be boiled in water. The hands should be rinsed in a disinfecting fluid immediately after every attention to the patient. The floor of the sick room must not be dry swept. Instead of sweeping go over the floor with a mop or cloth wrung out of the disinfectant. And instead of dusting, all accessible surfaces—as of doors, doorknobs, wainscots, window frames and ledges, tables, chairs, the exposed parts of the bed frame, should be wiped with a cloth damped with the disinfectant. All dishes and table utensils used in the sick room must be placed in a disinfecting fluid before being taken from the room. Flowers brought to the sick should not be thrown out, but placed in the disinfecting fluid and then burned.

A sufficient quantity of a good disinfectant, 1 to 500 bichlorid of mercury solution or a 5 per cent. solution of carbolic acid, should be kept in the sick room in a wooden pail, slop jar or other vessel—not metal if the corrosive sublimate solution is used—and into this all towels, napkins, handkerchiefs, pillow slips, sheets, etc., and all articles of clothing used in the room must be dipped and wrung out before removal. They should be taken to the laundry while still wet and there be rinsed with clean water, and then before drying have them thoroughly boiled. If the carbolic acid solution is used the rinsing is unnecessary, as this disinfectant does not injure the boiler.

All discharges from the mouth and nose in scarlet fever should be received upon pieces of old soft cotton, linen or worn handkerchiefs, and burned at once. Do not allow a cuspidor or other spit vessel to be used in the sick room, and especially do not allow the patient to spit on the floor. If this should accidentally happen, wash the place immediately with the strong disinfectant. The night vessel should be kept one-third full of the strong fluid, to be emptied not sooner than half an hour after each use, and then immediately resupplied with fresh fluid. All discharges should be disinfected in this way before being emptied into water closets or otherwise disposed of. These precautionary measures should be continued after the recovery or death of the patient until the house is disinfected.

Members of the family must keep away from public gatherings, must not go visiting or receive visitors in the infected house. They should have a disinfecting solution in which to wash hands, face and hair when necessarily leaving the house. The clothing should be sponged off with the same solution. Few cases can be properly isolated at home. An isolation hospital is a necessity.

The doctor should be careful not to carry infection on his clothing or person. He should put on a robe before visiting the patient, which can be kept in a hall or adjoining room. If he does not wear a robe he should not sit down in the patient's room nor handle anything in the room, not even the patient, if he can avoid doing so. If the doctor does not get infection on his clothing, hands, face or hair he will not carry it to others. Do not carry a hat full of air out of an infected house into some other home. If the hat is taken off and replaced in the house, a hat full of air is taken from the infected house. If the hat has been removed while in the house, it should again be removed in the open air and swung about to remove the pent-up air.

The existence of the so-called Dukes' or "fourth" disease may become of sanitary interest inasmuch as it seems not to require as stringent preventive measures as scarlet fever. At present, however, while the evidence in favor of such a form of infective disease distinct from scarlet fever and from German measles is considerable, the question must be held undecided and the action of sanitary authorities should proceed on the safe side of requiring the same quarantine as for scarlet fever. A full discussion of this question is to be found in Public Health Reports, Vol. XXII, No. 19, 1907.

School Dissemination. From a study of scarlet fever statistics B. K. Goldsmith[1] believes that schools assist in the spread of scarlet fever, although perhaps not to a very great extent. On the very probable hypothesis that the most usual latent periods are two to three days (more especially two) and that with few exceptions the range is one to four days, the author shows that the theoretical order in which the days of the week should stand if schools do exert an influence is as follows: Tuesday should be lowest, followed by Wednesday and Monday; Thursday and Sunday should not be widely separated, and Friday and Saturday should stand at the head of the list. As the result of the examination, Friday is the day on which most cases actually occur. As a general rule, there is a diminution in prevalence during the holidays. We cannot fail to be struck with the sudden rise in the number of cases when the schools reopen after the summer and Christmas holidays. This is probably due to cases overlooked and wilfully suppressed in which the children are sent to school by ignorant parents and contribute to the spread of the disease.

DIPHTHERIA.

Professor Tjaden[2] furnishes the results of some investigations into the time that the diphtheria bacillus may remain in the throat. Of 1,338 patients 67 per cent. were free from the bacilli at the end of two weeks, 75 at the end of three weeks, 83.6 at the end of four weeks, 89.1 at the end of five weeks, 93.4 at the end of six weeks, 96.9 at the

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(1) Lancet, June 29, 1907.
(2) Deut. Arch. f. klin. Medizin, November, 1906.

end of seven weeks, 97.4 at the end of eight weeks, 99.3 at the end of nine weeks, 99.5 at the end of ten weeks, 99.9 at the end of eleven weeks; but one patient continued to harbor the bacilli until the end of the seventeenth week. The investigation of members of the family showed that 35.5 per cent. of the brothers and sisters harbored diphtheria bacilli. Of mothers of patients 23 per cent., of fathers 15.5 per cent., and of other members of the family, servants, etc., 19 per cent. In cases of adults affected with diphtheria, the number of children associated with them who harbored the bacilli was 39 per cent.

It is impracticable, of course, to isolate every individual who harbors diphtheria bacilli until a test for them is no longer successful, but a great deal can be accomplished. It should be required that all children of the age of fourteen years or under should be isolated until they no longer harbor virulent bacilli in the throat, and that all children should be excluded from school, the members of whose families are the bearers of virulent bacilli. The isolation need not always be carried out so strictly that the carrier of the bacilli shall be confined to one room. Intercourse in the apartment, or in his own garden, or even walks outside of the dwelling, when accompanied by adults, may, in many cases, be permitted without endangering the community. The isolation of adults is more difficult, but fortunately few of the patients are adults. The prophylactic injection of serum is an excellent remedy for the prevention of diphtheria, but, in the author's opinion, it is not practicable as a general measure, although it may be applied in institutions for the protection of inmates. The usual methods of disinfection cannot be rated very highly. As a means of protection against diphtheria it is of little use to disinfect the walls of the room while one or more of the occupants harbor virulent bacilli in their throat.

These facts and methods have served as the basis for a systematic warfare on diphtheria during the last three years in Bremen. To facilitate the carrying out of the regulations the cases reported were divided into two groups, the first those in whom there was a general public interest in the conditions and the second those in whom the interest was of a more local nature. To the first group belong cases in which there were a large number in one family and single cases in houses connected with stores, hotels and the like, or where provisions were prepared or handled, also teachers, nurses, etc., or where members of the family were engaged in business that involved contact with a large number of young people. In these and similar cases all the members of the family were examined bacteriologically and isolation of those affected with infectious diphtheria bacilli was attempted and a final disinfection of the patient's room and its contents was ordered. In the second group the authorities were content with forbidding attendance at school for the patient and his brothers and sisters until a physician's certificate of health of all the members of the affected family was furnished. The author believes that, although the time is too short for a conclusive demonstration of the effectiveness of these regulations, there is evidence that they are securing the coöperation of physicians and people to such an extent that a control of the disease will eventually be established.

Diphtheria Carriers. M. Solis-Cohen[1] discusses the importance of diphtheria carriers, and concludes as follows:

1. The prevalence of diphtheria is due to the lack of control over latent cases of diphtheria and over the so-called "carrier" cases.
2. Diphtheria may occur in a latent form without pseudomembrane and with only slight symptoms.
3. Latent cases of diphtheria should be isolated until two successive negative cultures have been obtained.
4. All cases of sore throat should be reported to the health authorities and should be examined bacteriologically.
5. Infected "contacts" should be excluded from school or work and should not be permitted to frequent public places until two successive cultures have proved negative.
6. All who have been in contact with a diphtheria patient, whether at home, at school, or at work, should be examined bacteriologically.
7. Disinfection of fomites and terminal disinfection of rooms and their contents is insufficient and reliance thereon treacherous. Animate carriers of infection are more dangerous than the inanimate.

School Epidemic. E. E. Norton[2] reports an epidemic

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(1) Jour. Am. Med. Assoc., July 6, 1907.
(2) Lancet, July 13, 1907.

of diphtheria among the children of the Percy House Schools situated at Isleworth. The epidemic was discovered during the first week of January, 1907, when there were about 300 children there. In spite of all precautions the cases continued to appear, and February 11 antitoxin was used as a prophylactic measure. Five hundred units were given to each child not yet affected, and a second injection was administered about a month later. There were only eight cases of diphtheria among the children receiving antitoxin, and two of these occurred more than two months after the second injection. There were no ill-effects noted following the treatment except a slight depression, which soon passed off.

DISINFECTION.

The importance of definite regulations and instructions for disinfection after contagious diseases is urged by F. Böhm,[1] and, although his remarks apply particularly to Germany, the principle is of universal application. He says that while the notification and disinfection for certain epidemic diseases, such as yellow fever, plague, cholera, etc., are required, and the regulations are uniform, being in the hands of the district police, there are a number of the more common diseases, such as diphtheria, measles, scarlet fever, etc., in regard to which notification is only required if the case is severe. The necessity of disinfection follows from the requirement for notification and the authorities should specify the way to proceed in regard to the various contagious diseases and should issue circulars of instruction for the guidance of official disinfectors and also for the patients, and should provide free disinfection where it is required.

Formaldehyd Method. H. A. Higley[2] has investigated various methods of generating formaldehyd gas with reference to their efficiency by bacteriologic tests. The following methods were compared:

Methods. 1. Heating formalin (40 per cent. aqueous solution of formaldehyd gas) under pressure at a point above 100° C. 2. Heating formalin not under pressure at

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(1) Muench. med. Woch., Nov. 13, 1906.
(2) Med. Record, Oct. 20, 1906.

100° C. 3. Heating paraform to a sufficient temperature for the evolution of the gas. 4. Mixing formalin with some other substance, and by chemical combination setting the gas free. As representative of these principles the following methods were tested in this work: 1. Trillat autoclave. 2. Heating formalin in an open vessel over a powerful flame. 3. Paraform tablets. 4. Potassium permanganate method, as proposed by Evans and Russell. 5. Lime method, as proposed by H. V. Walker.

Bacteriologic Technic Employed. As a test organism, the *Bacillus pyocyaneus* was used.

Conclusions. The annexed tables show that by far the best comparative bactericidal results were obtained by the lime method. The results obtained are shown in the following tables:

TABLE I

METHOD	Amount of formalin or paraform used	Air space of exposure room	Length of time required to evolve gas in exposure room	Time of exposure to gas from beginning of evolution	No. of controls	No. of tests	Per cent. death of controls	Per cent. death of tests
Autoclave	6 oz.	786 cu. ft.	15 min	6 hrs.	10	500	0	42.4
Open boiling of formalin	6 oz.	786 cu. ft.	20 min.	6 hrs.	10	500	0	59.2
Paraform tablets	1000 gr.	786 cu. ft.	1½ hrs.	6 hrs.	10	500	0	21.6
Potassium permanganate method	6 oz.	786 cu. ft.	2 min.	6 hrs.	10	500	0	62.8
Lime method	6 oz.	786 cu. ft.	3 min.	6 hrs.	10	500	0	91.4

TABLE II

Autoclave	6 oz.	786 cu. ft.	15 min.	4 hrs.	10	500	0	31.2
Open boiling of formalin	6 oz.	786 cu. ft.	20 min	4 hrs.	10	500	0	41.8
Paraform tablets	1000 gr.	786 cu. ft.	1½ hrs.	4 hrs.	10	500	0	16.2
Potassium permanganate method	6 oz.	786 cu. ft.	2 min.	4 hrs.	10	500	0	54.
Lime method	6 oz.	786 cu. ft.	3 min.	4 hrs	10	500	0	86.2

To Prevent Fire. C. H. LaWall[1] calls attention to the danger of the gas from formaldehyd evolved by the permanganate method taking fire. Dr. C. Y. White has

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(1) New York Med. Jour., May 11, 1907.

observed that the mixture took fire on three occasions after the combination of the constituents had begun and the room was closed. The flame observed was probably that of burning formaldehyd, as it was described as of a pale-blue color, reaching several feet into the air from the generating container. Professor LaWall recommends that in view of the uncertainty regarding the cause of the ignition of the vapor in these observed cases and in recognition of the hitherto overlooked fact that formaldehyd vapor is very inflammable, it would be well to practice this method of disinfection with the precautionary measures of using small quantities of the ingredients (not over one-quarter or one-half pound of permanganate to a charge) in several containers, surrounding these containers with larger ones containing water, being careful to extinguish all gas jets, pilot lights, fire, and other possible causes of ignition, and keep the generators away from the sides of the room where a flame might be communicated to inflammable material. It is not believed by the writer that this method of disinfection need necessarily be abandoned, but it is essential that its limitations and dangers be not overlooked in its future use.

The *New York Medical Journal* editorially adds the following suggestions: The middle of the room, we presume, ought usually to be chosen, and it might be well to affix to each container an umbrella-like contrivance, of ample expanse, to check the undue ascent of any flame that might be kindled. Such a device, we suppose, would not interfere with the necessary diffusion of the gas, and it could be provided without materially increasing the expense of the process. The outer container holding water would sufficiently interfere with any dangerous transmission of heat downward or laterally. Possibly a mechanical device for securing a gradual admixture of the permanganate and the formaldehyd solution would prove preventive of the development of a flame. Evidently this convenient and efficacious means of disinfecting rooms must be rendered safe.

Efficiency of Hypochlorites. D. Sommerville and J. T. Ainslee Walker[1] refer to recent claims that the hypo-

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(1) Lancet, Oct. 27, 1906.

chlorites formed by electrolysis have a power of regaining their disinfecting power by some regeneration of chlorinated bodies which act as oxygen carriers, and show that this is theoretically improbable, because the disinfecting action of hypochlorites depends on the giving off of free oxygen from the hypochlorite, which results in transforming the unstable hypochlorite into a stable chlorid, from which no more chemical disinfectant action can be expected. Actual experiment shows that this view is correct, as these solutions in contact with organic matter, such as urine or urea, rapidly lose their efficiency and show no indications of regaining it.

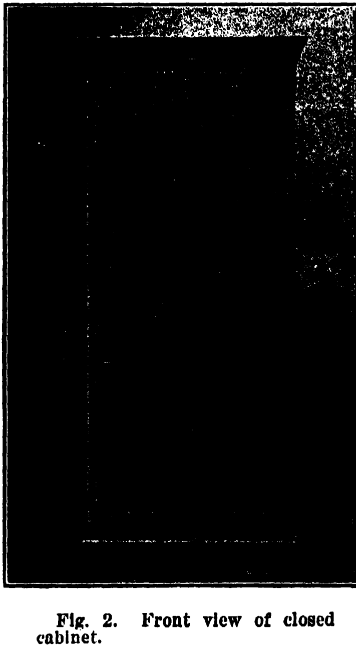

Fig. 2. Front view of closed cabinet.

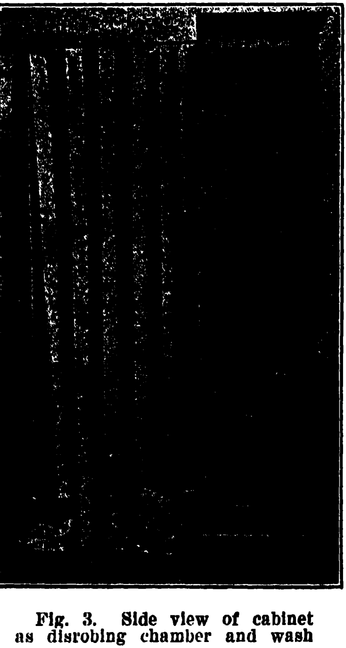

Fig. 3. Side view of cabinet as disrobing chamber and wash room.

Portable Disinfection Chamber. F. Schwarz[1] describes

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(1) Wien. med. Woch., June 22, 1907.

a movable closet which he has devised by means of which the physician on returning from a visit to an infectious case may remove his clothing and disinfect it before entering his house proper. The closet is 200 cm. (6½ feet) high, 90 cm. (3 feet) wide, and 40 cm. (16 inches) deep, and made to resemble an article of furniture, but on castors, so as to be easily portable. The two doors occupy the whole width of the closet, and when closed convert it into an air-tight room. By means of iron rods carrying curtains of sail-cloth an isolation chamber can be constructed communicating with the interior of the disinfection closet and provided with hooks on which the infected clothing can be hung. By a similar arrangement, attached to the back door of the closet, a washroom can be

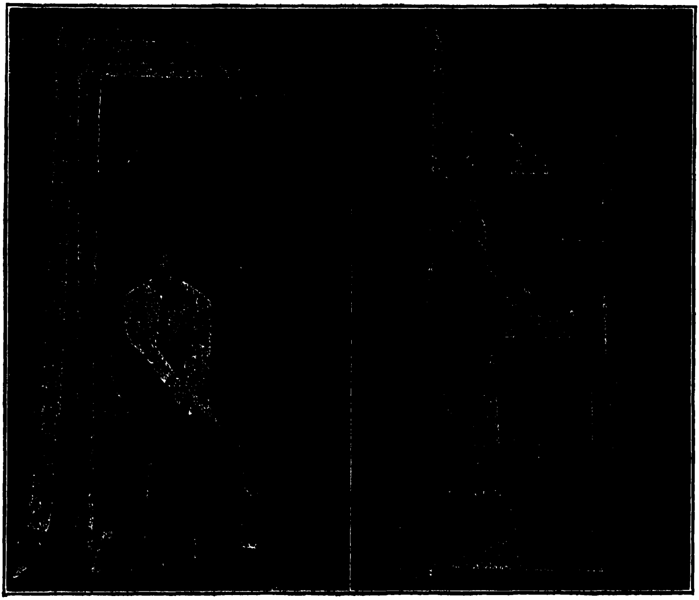

Fig. 4. Disrobing room. Fig. 5. Wash room.

established when the back door is closed, all the paraphernalia for complete personal cleansing and disinfection being arranged on the back door of the closet.

When the physician returns from a visit to a contagious case he announces his return by a special signal with the doorbell and an attendant brings the closet to the door, opens the back door and constructs the isolation chamber, placing some paper on the floor of the vestibule or hall. The physician steps from the house door directly into this room and the curtains are tightly closed. He then removes his infected clothing, places it in the closet, sets the disinfecting apparatus in operation, closes the closet door and finds himself in the washroom, where he performs his toilet, dons the robe and slippers previously placed there and leaves the room. The closet is then returned to its place and the disinfected clothing removed.

Telephone Disinfection. The danger of communication of disease by the telephone has been mentioned in former years, but the general opinion has seemed to be that the inconveniences of most methods of disinfection would be a bar to their employment inasmuch as most telephone users would probably rather take a certain risk of infection than be subjected to the breathing of disagreeable gases. The efficiency of the methods of disinfection proposed is not fully established. These matters are the subject of an investigation by E. Tomarkin,[1] of Bern, who has determined the conditions favoring the growth of pathogenic organisms when deposited on the mouthpiece of the telephone and the efficiency of the apparatus for disinfection known as the telephone disinfector. Not only the mouthpiece but the receiver may also be the means of conveying disease germs from one person to another. The germs most likely to be conveyed are those of diphtheria, scarlet fever, influenza, pneumonia, cerebrospinal meningitis, ordinary sore throats, and lastly tuberculosis. Emulsions of diphtheria bacilli and staphylococcus aureus were sprayed against the diaphragm of a telephone transmitter and after a certain time the dust collected was examined by preparing agar cultures. The result of these experiments was

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(1) Muench. med. Woch., Dec. 11, 1906.

that numbers of virulent and cultivable germs were shown to be deposited on the surfaces of the instrument. The telephone disinfector of Percy Simond consists of a capsule holding disinfecting tablets that smell strongly of formalin, and which can be attached to the telephone in such a way that the gases given off come in contact with the surfaces on which the germs are deposited and destroy the microörganisms. The experiments made with this instrument show that it is able to furnish disinfection for two weeks without any special diminution in its disinfecting power. The apparatus is therefore a satisfactory means of securing the disinfection of the telephone and very suitable to application to public telephones.

CONVEYANCE OF DISEASE BY INSECTS.

The rôle of insects in the dissemination of disease is presented as follows by D. H. Burge:[1]

1. The insects may serve merely as mechanical agents in the dissemination of disease through the soiling of their bodies with the infective material and in turn depositing this material on foodstuffs on which they may alight or into which they may fall.
2. Another mode of dissemination in which the insects also serve in a mechanical way is seen in such instances where they feed on the infective materials and again throw off the infective organisms through their excretions and contaminate foodstuffs in this manner.
3. Certain suctorial insects may also serve in a mechanical way in diseminating disease when the infective agents in the blood of the diseased animal or person are carried to a healthy individual on the proboscis of the insect.
4. Some of the suctorial insects may also serve in a biologic way as the disseminators of disease if the infective agent undergoes some transformation in the body of the insect before it is again transmissible to another individual.
5. In addition to this, suctorial insects may serve in a biologic sense as the disseminators of disease when the female transmits the infective agent to its offspring, which in turn convey the organisms to healthy individuals.

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(1) N. Y. Med. Jour., June 15, 1907.

The insects which are believed to be capable of serving either in a mechanical way or in a biologic sense as the carriers or transmitters of the infective agents of disease are flies, fleas, roaches, mosquitoes, lice, bedbugs, and ticks.

The diseases which may be carried or transmitted by insects are typhoid fever, dysentery, cholera, plague, tuberculosis, anthrax, sleeping sickness, relapsing fever, filariasis, malaria, yellow fever, Texas cattle fever, and the spotted fever of the Rocky Mountains. The rôle of the gross parasites in the diffusion of infectious diseases is also the subject of an article by Robert B. Preble.[1]

The Wood Tick. H. T. Ricketts[2] has shown experimentally that the wood tick (*Dermacentor occidentalis*) is capable of conveying the Rocky Mountain spotted fever from one guinea-pig to another and believes that in the mountain valleys the gopher and possibly other animals may act as intermediate hosts maintaining the disease from one season to another. The chain of evidence has been completed by finding infected ticks under natural conditions on the west side of the Bitter Root Valley.

The Bedbug. A. A. Girault[3] reviews the literature bearing on the agency of the bedbug in conveying disease and concludes that nothing has so far been proved against this insect, although there are many possibilities for which there is more or less evidence. The investigation has, however, only begun. Comparatively few experiments have been made and the most enthusiastic optimism would find it a difficult matter to conclude that no danger is to be apprehended from this source.

The House Fly. G. K. Dickinson[4] summarizes our knowledge of the part played by the common fly in the dissemination of disease. There are seven varieties of flies infesting our houses of which the common fly *Musca domestica* forms 98 per cent. They are hatched from eggs laid in manure or other decaying organic matter and breed very rapidly so that it is estimated that a single fly will have a progeny amounting to sextillions in a single season.

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(1) Ill. Med. Jour., July, 1907.
(2) Jour. Am. Med. Assoc., July 6, 1907.
(3) Jour. Am. Med. Assoc., July 14, 1906.
(4) Medical Record, Jan. 26, 1907.

Flies feed on all sorts of refuse so that they may easily convey disease from the excretions which contain the germs to food or to the skin or other tissues. It is thought by some that flies do not travel far from their birth-place but others think that they can be attracted by food for several miles and that they can fly at the rate of about ten miles an hour. Bacilli ingested by flies may be retained in their digestive tract for as long as 23 days. The secretions of the fly do not destroy the microörganisms as they have been cultivated from the contents of the digestive tract after having been swallowed by the fly. Flies are sometimes killed by the toxins developed by the germs present in their digestive tracts, especially when these are very virulent as those of plague, anthrax, etc. Repeated experiments have shown the possibility of flies transmitting the germs of various diseases, more particularly cholera, typhoid fever, tuberculosis, etc.

R. M. Buchanan[1] reports some experiments which demonstrate the part which flies are capable of playing in the spread of infection. It may be remarked that the form and structure of the fly's foot (tarsus) are such as render it capable of carrying a large amount of infective material. It consists of five segments or "joints" which are clothed with short hairs and armed with numerous bristles and spines. The terminal segment is also provided at its tip with a pair of movable claws and a pair of membranous flaps (pulvilli)—the latter coming into action on smooth surfaces.

The diseases which were made the subject of the experiments were typhoid fever, swine fever, staphylococcal abscess, pulmonary tuberculosis, and anthrax.

The insects were shown to be capable of transmitting typhoid bacilli but the number of colonies which grew on the nutrient medium after it had been traversed by a fly that had walked over typhoid fecal matter were very few. With swine fever the result was similar. On the other hand, the experiments gave evidence of the possibility of the communication of staphylococcal infection, tuberculosis, and anthrax.

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(1) Lancet, July 27, 1907.

The experiments conclusively showed that flies alighting on any substance containing pathogenic organisms are capable of carrying away these organisms in large numbers on their feet and of depositing them in gradually diminishing number on surface after surface with which they come in contact. They further served to demonstrate the necessity for the exercise of stringent measures to prevent the access of flies to all sources of infection and to protect food of all kinds against flies alighting on it.

Tsetsei Fly. This insect, which is the recognized host which conveys the trypanosome of sleeping sickness, has been recognized in the neighborhood of Khartoom, and this fact suggests the danger of a northward spread of the sleeping sickness from its habitat in central Africa. Investigations have shown the presence of some trypanosomes in animals, but so far none have been found in Khartoom in men.

RATS AS DISEASE CONVEYORS.

A bulletin of the Department of Agriculture deals with the economic injury and disease conveying power of the common rat. That the rat if allowed to multiply unchecked would soon overrun the country is evident from the rate at which they increase. The amount of damage done to grain by these pests is very great and it is estimated that if farmers supported one rat for every cow, horse, sheep, and hog, the toll levied on the cereals by these rodents would reach the enormous total of $100,000,000 a year. In regard to the ways in which they may convey disease it is suggested that they may have something to do with trichinosis. It is said that hogs have been seen to devour rats and on the other hand rats have been known to devour the tainted flesh of the hog. It has been found also that they are very susceptible to hydrophobia, so that they may be responsible for canine rabies. The methods for destruction of rats leave much to be desired. The most important measures suggested are poison, traps, ferrets and fumigation. Barium carbonate and strychnin are the most useful poisons. The so-called guillotine trap made entirely of metal is probably the best. Ferrets and dogs require experience to make them effective. In fumigation a wad of cotton is saturated with carbon disulphid and pushed into the burrow which is closed to prevent the escape of the gas. This method is not applicable in dwellings. The most effective is prevention by careful sanitation, which secures the removal of all food which will support the pests. Proper construction of the floors and walls of houses should prevent access of these animals to dwellings.

WATER.

The hygienic questions connected with the water supply relate to: 1. Securing of source of pure water. 2. Guarding this supply from contamination. 3. Conveying the water in an uncontaminated state to the municipality which is to use it. 4. Testing the water at its source and at its destination to determine whether contamination has occurred. 5. The purification of infected supplies, either at their source or before delivery.

The question of water supplies was a subject for much debate at the meeting of the British Medical Association in 1906 and the papers read at this meeting by Henry D. Holton, T. A. Starkey[1] and others constitute the basis of this review. The facts regarding the communication of disease are well known and the general facts regarding the nature of the water supplies are well known, but some things require special attention. It is of the greatest importance to a municipality in securing a water supply to consider not only present conditions but the needs and chances of the future. One proposition may be stated emphatically: It is necessary for a city to control the source of its water supply to the water shed or, no matter how pure it may be originally, there are great probabilities that it will become contaminated in the future. A similarly important truth concerns the water of wells. Unless they are protected from surface pollution they are not likely to remain pure.

The sources of the water supply may be divided into springs, wells, and artesian wells, lakes fed by small streams, rivers and large lakes. Springs furnish pure water if the surroundings are clean so that surface water

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(1) British Medical Journal, Sept. 15, 1906.

does not drain into them. Surface wells are not likely to be pure and are with great difficulty guarded from contamination. Deep wells and artesian wells are sources of pure and usually good drinking water if kept carefully guarded from surface contamination, but unless this is done the contamination may be quite as great as that of surface wells and may be the cause of unexpected epidemics. Lakes fed by small streams are likely to be contaminated by the population on their banks and along the streams that feed them. The municipality that draws its water supply from such lakes should control the lake and the region which supplies it and should carefully police the water shed and the tributary streams. The same principles govern the treatment of smaller rivers, but the larger rivers have been supposed to be in a different class because of the idea that they would purify themselves by the oxidation of the organic matter in the course of their flow. This idea is erroneous and has been given up by sanitary authorities. The purity of the water of a long river should not be depended on unless the city can control its whole course and prevent any serious contamination.

In consequence of the dangers of contamination and the difficulties besetting any attempt at policing the water shed it is a serious question if it is not a better plan for the municipality to purify its water supply by filtration before delivering the water to its citizens. Different methods of filtration are applicable to the purification of water, but in general sand filtration has proved itself both cheap and efficient and is generally to be recommended. The testing of water is conducted by two methods, the chemical and the bacteriologic. The chemical gives information as to possible and probable contamination, but is powerless to reveal actual presence of the germs of any particular epidemic disease. Bacteriologic examination as usually carried out gives information very similar to the chemical, but it may be made so as to reveal in certain cases the presence of organisms that indicate sewage contamination if it does not discover the actual presence of the causes of epidemic diseases.

In regard to the purification of water contaminated by sewage two opinions were expressed which while somewhat antagonistic set forth clearly two important views of this subject. The first is that of Professor Glaister, who says that no water once contaminated by sewage is fit for drinking without filtration, and the other is the statement of Nasmyth that the installation of a filtration plant should not be considered an excuse for failing to prevent the contamination of the source of supply by sewage. No method of filtration has yet been devised which will render a water once contaminated by sewage absolutely safe. Both methods of securing a pure water supply should be used where practicable and it should be impressed on the population of our cities that only constant diligence and the use of every reasonable precaution can be expected to remove the evils resulting from contamination of the water supply. Some cities have been able to show a marked improvement in their mortality following the installment of efficient means of preventing contamination and this improvement has extended to the general mortality as well as to that of typhoid. It is probable that this is largely due to the reduction in intestinal diseases due to impure water from which children are especially liable to suffer.

MILK.

D. J. M. Miller(1) emphasizes the dangers from impure milk and the duty of the physician in regard to limiting them. He notes that medical men are not as careful as they should be even in matters that are largely under their control. The managers of hospitals, who willingly furnish their patients with the most expensive drugs and apparatus, are contented to serve these same sick people with milk obtained from the cheapest dealer without any inquiry as to its source. The standard of a pure milk is thus stated by R. Harcourt:(2) Investigations and experience have shown that freshly-drawn milk that has been produced under strictly sanitary methods should contain only a few hundred bacteria to the cubic centimeter. It has been obtained so pure that at the end of twenty-four hours there were still less than 100 germs per cubic centimeter. In this case the utmost care was taken in every detail. The cows were even taken to the milker, who remained in a thoroughly disinfected room. Such milk will remain sweet for a long time, especially if kept at a low temperature.

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(1) New York Med. Jour., Sept. 22, 1906.
(2) British Med. Jour., Sept. 22, 1906.

Country milk produced under ordinary methods, but drawn from reasonably clean cows in clean stables, and kept at a low temperature, should not contain more than 5,000 to 20,000 bacteria per cubic centimeter when first placed on the market. Milk of this nature, if free from objectionable flavor, may be regarded as satisfactory for general consumption. However, milk produced under conditions ordinarily prevailing is likely to contain 50,000 or more germs per c.c. when first offered for sale. The number increases very rapidly at the ordinary temperature, consequently milk delivered in our larger towns and cities may often contain several hundred thousand, or even many millions, of bacteria per c.c.

A large number of organisms in the milk indicates that the milk is old, or that it has been kept at too high a temperature, or that it has been produced under insanitary conditions. If the germs are chiefly lactic-acid organisms, the milk may be old, but not necessarily dirty. The presence of many liquefying organisms is an indication that filth of some sort has gained access to the milk, and that it may contain many other germs of a harmful nature.

The consumer has a right to demand that the milk furnished him shall be clean; that it will keep at least twenty-four hours after it is received, if kept at a temperature of 60° F., or below; that the flavor be not injured by improper feeding, careless methods of handling, or by the development of bacteria which cause bad flavors; that it contain no disease germs, or any form of preservative; and that the milk have a certain known composition which is uniform from day to day.

In order that the milk may conform to these requirements it is essential that the cows be healthy; that they get good food and water; that they be kept out of the filth of a dirty barnyard; and that they be stabled in a clean, well-lighted, and well-ventilated barn. The ceiling should be tight, excluding dust and chaff from above, the sides smooth, and the whole whitewashed annually. It is imperative that the udders be thoroughly cleaned before milking, and that every care be taken to prevent dust and dirt of all kinds from getting into the milk. As soon as the milk is drawn it should be removed from the stable to a milk room, which must be some distance from the barn and so arranged that it can be easily cleaned and disinfected. There the milk should be aërated and cooled to about 40° F. If it is to be bottled for direct delivery it should be done at once and kept at a low temperature until delivered. All utensils, cans, bottles, etc., should be thoroughly cleaned and sterilized. In fact, only the most careful attention to every detail of the work will ensure clean, pure milk.

Harcourt suggests that milk should be made uniform in content of fat or else should be sold by weight at a price determined by the amount of fat. The production of certified milk is a step toward securing a pure milk supply. Certified milk is a term originated by the Essex County, New Jersey, Milk Commission and applies in strict use only to milk produced under medical inspection and control. A good class of certified milk should not contain more than a few hundred bacteria per c.c., although some standards allow as many as 10,000. The increased price can well be borne by the well to do so far as milk is to be regarded as a luxury or as a food intended for the sick, but it is evident that it is not practicable to increase too greatly the cost of milk intended for common use, as it must come in competition with other food products of as great nutritive value which can be sold at a lower price.

J. Glaister[1] sums up as follows the desiderata required of milk in the light of modern research:

1. A guarantee at the hand of a qualified sanitary official, after inspection of premises, animals, and milking operations of every dairy farm sending milk to a city, that cleanly conditions had been secured, and that clean milk was being supplied. Such a guarantee in the hands of a milk-seller would command the confidence of the public and would be calculated to reduce milkborne disease.

2. The systematic official inspection of dairy farms and their water supplies; and

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(1) British Med. Jour., Sept. 22, 1906.

3. Registration, after inspection, of such farms, and of places of milk distribution in cities and towns.

The observance of such conditions as the foregoing might be tested by the establishment of certain standards, on the part of sanitary authorities, as have been outlined by Richards as follows:

(*a*) A standard of cleanliness respecting amount of deposit of foreign matter;

(*b*) A bacteriologic standard indicating the maximum number of organisms permissible in milk in summer;

(*c*) A standard of temperature to ensure the proper cooling of milk, and the maintenance of a low temperature during transit; and

(*d*) A prohibition of the sale of milk which, within six hours after purchase, could not be boiled without coagulating.

H. C. Pattin[1] believes that in order for pasteurization or sterilization to be effective it should be carried out at the source of supply and that no method of testing or inspection will be of much avail unless the milk is delivered to the consumer in bottles or other sealable containers which have been sealed at the source of supply. The establishment of a standard of purity such as has been contemplated involves the sale of milk to the poor at cost and therefore the milk must be furnished to the poor by the municipality.

The control of the milk supply involves some sort of control over the manner of handling the milk at its source of production and that is a delicate question to solve for most municipalities. It was the opinion of the British Medical Association that the time had now arrived for a stricter enforcement of the laws concerning the housing of cattle, storing of milk, and the inspection of cattle and milk.

C. Braun[2] discusses the adulteration of milk and states that it is now very difficult in Russian cities to obtain milk that has not suffered some manipulation by which its composition is altered. He notes four principal methods of adulteration: 1. Addition of water; 2, skimming; 3, mixing whole milk with skimmed milk; 4, removal of a

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(1) British Med. Jour., Sept. 22, 1906.
(2) St. Petersburg med. Woch., March 10, 1907.

part of the fat and addition of water. This method escapes detection by the hydrometer because the removal of fat raises the specific gravity and water can be added in the proportion necessary to restore the required specific gravity of pure milk. If the water added contains nitrates a simple test will determine that water has been added since pure milk does not contain a trace of nitrates. The determination of fat may show that such a milk is below the fixed standard for fats, but tests of the milk when freshly drawn from the udder have shown that the amount of fat is sometimes very low (as low as 2.5 to 2.8 per cent. of fat). It is quite practicable for the municipal authorities to fix a minimum standard of fat regardless of the low percentage shown by some analyses, as the averages of most herds will reach the standard fixed and there should be no objection to mixing the milk from different cows if the mixing is done under proper conditions.

The report of the commission appointed to determine the conditions existing with reference to the milk supply of Washington and to make recommendations as to remedies constitutes a very complete review of the sanitary relations of milk and is to be published by the government as a bulletin.

Vienna's Milk Supply. E. J. Lederer[1] describes as follows the milk supply of Vienna.

The greater amount of the milk consumed in Vienna is supplied by the dairy company of lower Austria, which is under the control of the provincial diet of lower Austria. The central depot in Vienna receives milk from 76 affiliated dairies throughout the province, these in turn receiving it from the individual producers. The main object of the organization has been to regulate the methods of obtaining and handling the milk at the various places of production. The directors of the affiliated dairies are expected to inspect the milk at the sources of supply according to definite instructions given them by government inspectors of dairies. The inspectors visit the various stables, criticise the condition of the stock and the cleanliness of the barn, etc., and make the owners remedy

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(1) Med. Record, June 15, 1907.

existing defects or introduce needed improvements. They also supervise the feeding and care of the cows, as well as the milking. The dairies are inspected at regular intervals. Veterinary inspection of the milch cows has likewise been introduced.

The new-drawn milk must be delivered at the local depot after each milking, if possible, while still warm from the cows. It is then measured, tested, purified, and cooled, and if not sent off immediately it is kept cool until shipped. The local depot of each dairy must be modern in every respect and comprises an ice-house, cooling compartment, wash house and all apparatus for cooling and purifying the milk and determining the amount of fat, etc. The care and cleanliness observed in milking is determined by the amount of impurities in the milk of each producer.

In the central depot at Vienna the milk is weighed in a large vat and passes through a system of strainers and close-meshed gauze into the pasteurization apparatus, where it is heated to 70° C. This pasteurization renders harmless all disease-producing organisms that may be present, especially the tubercle bacillus, while the milk does not undergo any essential changes either physically or chemically.

After pasteurization the milk is chilled to from 2° to 4° C. (35.6° to 39.2° F.) and thoroughly aired and then bottled by means of a bottling apparatus and immediately stoppered by machinery with paraffined paper stoppers bearing the date of bottling.

After pasteurization a certain quantity of the milk is creamed through two centrifuges and divided into *whipping cream* (30 per cent. fat), *tea cream* (16 per cent.), and *coffee cream* (10 per cent.), as well as skimmed milk. These products are each cooled in separate apparatus immediately after the centrifugal process. The various kinds of cream are bottled by machinery and the skimmed milk is poured into cans plainly marked.

The employés who handle the milk are periodically examined by a municipal health officer and persons suffering from tuberculosis or other contagious diseases are excluded.

The milk for children is handled in a separate room and is supplied by only one dairy where the cows are tested with tuberculin to make certain they are free from tuberculosis. This milk is sterilized at 102° C.

The process of pasteurization has absolutely no effect on the nutritive value of the milk, while rendering its taste more pleasant. Neither does it affect the formation of cream. The system has been in use seven years and the statistical data show the beneficial effects of the improved milk supply especially regarding the feeding of infants. The process of pasteurization increases the cost of milk (1-13 to 1-4 cent per quart).

Regulations of Milk Supply. H. G. Piffard[1] suggests the following regulations of the milk supply:

1. The present classification and nomenclature of the department should give place to that adopted by the national authorities. This would raise the milk fat content from 3 per cent. to 3.25 per cent.
2. The sale of skim milk should be permitted under proper restrictions as to labeling, etc.
3. The department should recognize the value of sour milk, whole and skimmed, both as to their nutrient and remedial value, and prescribe suitable regulations for their sale.
4. The regulations should be modified to eliminate the word adulterated as applied to natural milk such as that of the Holstein breed which may contain less than 3 per cent. of fat and 12 per cent. of solids.
5. The most important feature regarding the milk supply is cleanliness, purity and sanitary surroundings at the place of production. This can be secured only by dissemination among the milk producers of correct scientific information, together with systematic inspection of the dairy farms by inspectors selected and instructed by the state Department of Agriculture. The author believes that the work would be more thoroughly done if under state inspection.
6. The milk-borne epidemics of scarlet fever, diphtheria and typhoid fever can be prevented or rendered less frequent, according to Piffard, by state legislation alone. Improper contact of those liable to infect the milk should be classed as a felony, and if deaths result from wilful

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(1) Med. Record, June 15, 1907.

negligence in this respect, the crime should be regarded as partaking of one of the degrees of manslaughter.

MEAT.

Inspection in Germany. H. A. Macewen[1] describes the method of meat inspection in Berlin and incidentally throughout Germany. The animals that are slaughtered are inspected previously to killing and after slaughter are again inspected in the abattoir. The inspection is carried out by two inspectors, a senior and a junior officer. Both are qualified veterinarians. The junior inspector examines the carcases and decides whether they are usable, in which case they pass to the public market whether they are of good or of doubtful quality. The latter class of animal is inspected by the senior, who may pass it as salable or may place it in one of three classes, (a) of poor quality, (b) usable under certain conditions, (c) not usable. The meat of poor quality is sold to the poorer classes, that to be sold under conditions is sterilized under government directions before leaving the abattoir. The meat which is exposed for sale must be again inspected, before its sale, by the police authorities to learn whether it has really passed the inspection. This prevents meat from surrounding towns which is not subjected to the Berlin regulations from being exposed for sale in Berlin. These methods secure a meat free from parasites which is, in the author's opinion, very necessary even for England where meat is generally thoroughly cooked before being eaten. The cooking of meat may harden its fiber and render it less digestible, and it is not always certain that cooking, supposed to be thorough, secures the heating of every part of the meat so as surely to destroy all parasites.

Inspection in the United States. D. A. Hughes[2] discusses the new meat inspection law in the United States. That a disgraceful condition of things in the packing houses of the country existed prior to the establishment of the new regulation is generally admitted. The control of the government was not exercised

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(1) Lancet, Feb. 2, 1907.
(2) New York Med. Jopr., Oct. 20, 1906.

to a desirable extent over the sanitary conditions surrounding the killing of the cattle and the packing of the meat. The law has resulted in great improvement and it is now safe to say that the slaughtering and packing of meat under federal inspection is done in a manner satisfactory to sanitary requirements. But unfortunately the law does not reach meat which does not enter interstate commerce and hence a portion of the meat killed in the United States goes uninspected. State laws to conform to the national law and municipal inspection are needed to complete the work.

The influence of preserved animal foods in the production of scurvy has been investigated by Ekelöf,[1] who believes that some change goes on after the food has been preserved by which it becomes capable of causing such affections. From a careful study of the health and dietary of practically all authentically recorded polar expeditions he finds that the one common factor in all the cases in which scurvy made its appearance was the use of preserved meat and fish for a long period and to the more or less complete exclusion of normal, fresh animal food.

DUST.

The hygienic importance of the removal of dust and the methods of accomplishing it receive a thorough exposition in an article by U. Friedemann.[2] Since the dust of rooms so frequently contains pathogenic germs some improvement in the methods of cleaning such places is to be desired. The beating of rugs and carpets is an inconvenience, especially when undertaken in narrow courts, and is a menace to health. The pneumatic method of cleaning carpets and upholstered furniture is a great improvement hygienically, as it has been shown by Berghaus that by this method a much smaller number of bacteria escape into the air of the room than by ordinary methods and it has also been shown that the vacuum method removes more dust than the ordinary whipping can do. The principal objection to this method is its cost and this has caused the introduction of various materials for use to prevent the rising of dust, such as dustless oil and various other oily

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(1) Hygiea, 1904, iv, p. 577.
(2) Berlin klin. Woch., July 16, 1906.

preparations which are applied to floors, etc., to catch and confine the dust. One great objection to these methods is the moist, sticky condition in which the floor is kept and this renders them unsuitable for gymnasiums, etc. The efficiency is very considerable. Lode found that in a school room treated with one of these preparations 92 per cent. less germs were to be found than in a room that was not oiled. This continued to be the case for seven weeks.

The dust of the streets has become more or less important as a carrier of germs and especially since the increase of automobile traffic the question of how to reduce it has assumed great importance. In the cities the methods of washing and cleansing already in vogue are probably the best, especially if the streets are asphalted, but the cleaning needs to be frequently repeated as the street dries in a few hours and becomes again a source of danger. On country roads, especially at watering places, the treatment of the roads must be somewhat different. The application of petroleum products has been proposed, but the excessive cost is prohibitory (about $300 per mile). The use of calcium chlorid to keep the surface of the road moist has not been successful, as in wet weather the mud is undesirable and the dust carrying with it particles of the salt is very irritating to the respiratory passages. The application of coal tar seems to promise the best results, but it is necessary that the road should be in good condition when it is applied. The cost is moderate (about $120 per mile).

THE DWELLING.

J. J. Cassidy[1] discusses the hygiene of the home, giving suggestions as to the situation, materials, foundation, method of cleansing, etc. As far as possible every room in the house should be penetrated by direct sunlight and the shadows of trees should be avoided if they tend to make the rooms gloomy. As a general rule this desideratum can be only imperfectly attained. If the house face north or south some rooms must be deprived of sunlight during the most or all of the day. Cassidy suggests that the house

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(1) British Med. Jour., Sept. 22, 1906.

be built with the corners facing north and south and thus every room will receive sunlight. It would seem as if the same purpose might be attained by having the house face east and west. The foundation should be laid in such a way that it will keep out the damp air from the soil. Illuminating gas has been known to cause poisoning by entering the house through the basement.

The cellar should be floored first with clay, which can be packed very solid and serves a better purpose than concrete in excluding moisture. Above this may be laid a layer of concrete. Provision should be made for drainage around the outside of the basement wall. The exterior of the foundation wall should be treated with asphalt to prevent the moisture of the soil penetrating the structure. Brick is the preferable material for the outer walls, although it is sometimes necessary to cover it with paint to keep out driving rains. It is well to leave an air space between two double walls so as to increase warmth and prevent the penetration of moisture. Wall papers are somewhat objectionable and the floors should be made of hard wood and covered by movable rugs instead of carpets. Sharp corners should be avoided. Ventilation should be provided for by chimney flues or fireplaces. The most important rooms from a hygienic point of view are the bedrooms and the kitchen and these should be furnished in such a way as to provide for easy and frequent cleaning.

Sunlight as a Disinfectant. In a public lecture on the choice and management of lodgings P. Juillerat[1] insists very strongly on the importance of sunlight in the destruction of microörganisms, especially those of tuberculosis. Every room should admit the direct light of the sun and no room should be used that is not well lighted. In addition he cautions housewives against shutting out the light by hangings and window curtains. In reply to the objection that the sun will spoil the furniture and fade the carpets he tells them that every year that they add to their precious furniture is added at the risk of taking away a year from the lives of some one of their loved ones.

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(1) Le Progrès méd., Jan. 6, 1906.

INFLUENCE OF SUNLIGHT.

Some recent investigations by C. E. Woodruff[1] indicate that light has an unfavorable influence on the animal organism and that this may be one of the reasons why white men who are insufficiently protected against the action of light in consequence of the lack of pigment in their skin are unable to bear tropical climates. Woodruff's experiments were made on young rats which were kept in the direct sunlight and were stunted to a remarkable degree, though all other conditions of their environment were extremely favorable to their nutrition and growth. It is objected to these experiments that rats naturally live in the dark and would not bear the light well. According to Woodruff neurasthenia is especially due to the action of light and the tendency to group trees around houses and place hangings at the windows as an instinctive protection against an unduly strong light. Cloudy climates and resorts in the deep woods are said to be the best for neurasthenics. It has been suggested that the clear skies and bright light of some of the northwestern parts of this continent will render them as unfavorable to occupation by the white race as the tropics.

CAR SANITATION.

T. R. Crowder[2] discusses the problems of car sanitation. The railway had long ago reached such a stage of activity in America that its sanitary problems became of importance. That the problems presented have not yet been solved in all their relations, however, is amply proven by the great diversity of opinion still held by sanitary experts. Further investigation is needed. It is desirable to know: First, the danger arising from the mechanical accidents; second, the danger of contracting infectious diseases; third, the danger incident to a group of miscellaneous influences, such as the rapid and variable motion, faulty ventilation, heating and lighting of cars, and the breathing of dust, smoke and engine gases.

Leaving out of consideration the danger of mechanical injury the danger of contracting infection may be dis-

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(1) Am. Med., April, 1907.
(2) Jour. Am. Med. Assoc., May 11, 1907.

cussed under the following heads: 1. The danger of infection through association, that is, by direct contagion; 2, the danger from the use in common of the facilities for comfort and convenience; 3, the danger from the infected car.

Infection Through Associatoin. The association of any considerable number of persons in any confined space renders each one a possible victim of the contraction of a contagious disease. That the average danger is in general slight and is not worthy of exerting any deterrent influence on social intercourse or travel seems to be a generally accepted opinion. It is nevertheless probable that such association is responsible for a very large proportion of the ordinary acute infections, and particularly of those affecting the air passages. How far is the railroad able to aid in preventing contagion from this cause by contributing to the desirable segregation of the diseased from the healthy?

The legal problems involved in an attempt on the part of the railroad to segregate the sick from the well are yet undecided. The railroad is a common carrier and it is not possible to refuse service except under well defined conditions, and since neither ticket agents nor conductors are, or can be from the nature of the case, physicians, it is difficult to see how, at least under present legislation, transportation is to be denied even to those who may be affected with communicable diseases. The proper remedy, if any remedy is possible, would be to enact a law making it criminal for those affected with communicable diseases to travel by railroad or other common carrier without providing suitable means to prevent infection of others. Crowder sees several objections to the proposal to limit the liberty of the tuberculous to travel, and while he thinks that separate cars for such patients would be a step in the right direction he deems it impracticable because of economic reasons, as there would not be enough of such travel to pay for separate cars, and he thinks that it would prove impossible to get those who constitute the most dangerous element of the tuberculous travelers to declare their disease and take their places in the special car.

Infection Through Common Use of Facilities. In the avoidance of indirect contagion the railway should provide utensils as sanitary and easily cleaned as possible and should see to it that they are kept as clean as possible.

The common drinking cup has been much discussed and rigidly criticised of late, and orders for abolishing its use entirely have been considered by the surgeon-general of the United States Public Health and Marine-Hospital Service. It would be a sweeping reform, and the effect of such a move on the public humor can not be read in advance. For the present the railroad is obliged to furnish something in the way of a drinking cup, however, and the attempt should be to provide one with the least liability of conveying infection from lip to lip. It should have a perfectly smooth surface, outside and in, preferably made of glass to better accomplish this result and to render immediately visible gross contamination and dirtiness. It is through the medium of the common drinking cup that the closest indirect relations, from a hygienic viewpoint, are established between passengers; and it is here, perhaps, that the greatest danger of the indirect transmission of disease arises. There is considerable experimental evidence of cup contamination. A. Moeller, of Berlin, has recently found tubercle bacilli, influenza bacilli, staphylococci and streptococci on the edges and in the residue remaining in communion cups. Kinyoun found pneumococcus, streptococcus, staphylococcus aureus and diphtheria bacillus once each in twenty-one drinking cups from sleeping cars. Probably cups in constant or oft-repeated use are very generally infected, since mouths are always so and people generally are careless drinkers. For the most part they contain harmless bacteria (Kinyoun found but one of the organisms isolated to be really pathogenic, the diphtheria bacillus, while the pneumococcus was very slightly so); and the same number of organisms found in the wash basin would no doubt be entirely harmless; but the drinking glass comes a little too close for comfortable suspicion. Its contents gain direct entrance to the body and traverse the whole gastrointestinal tract with its vast extent of absorbing surface where some point of entrance for organisms may be found. Obviously the danger of transmission from this source is greatest in those diseases where there are lesions in the mouth, as syphilis, actinomycosis, aphtha and tonsillitis; and quite as obviously the simplest way to avoid it is for each person to carry his own drinking cup, as many do already. The railroads can scarcely be held responsible for a danger to which they do not contribute more directly than they do to this, and in which they follow a custom so generally followed and demanded by the public. The common drinking cup is universal. The evil it contains does not exist in its worst form in well-regulated cars where the cups are, or should be, frequently cleaned. There are ways of drinking from a cup which render the probability of contamination very slight. Most people are careless in this as in other personal habits. Rinsing and a clean towel will make almost any cup harmless, however, if the user cares to take so much trouble.

Infection From the Car Itself. The investigations of Kinyoun failed to show any alarming contamination of the hangings, bed linen, and the dust from sleeping cars or floating in the air of railway coaches. The facts are such as to impose on the railway companies the duty of thoroughly cleansing the cars at the end of the trip. Crowder says:

Though we must expect most cars to contain pathogenic microörganisms in greater or lesser numbers, it is nevertheless desirable that the railroads should take precautions to reduce them to a minimum. Good mechanical cleaning is of first importance. Remove dust, and dirt or excreta that may become dust, and most of the bacteria, grossly considered, will be removed with it. Beat or blow with an air blast the seats and carpets, outside the car if possible. It will not remove the last particle of dust, but if it is well done not enough will be raised from them in ordinary use to afford danger of infection to the car occupants. Scrub the floors, wash basins and closets and disinfect them regularly. Wipe down the woodwork. Expose bedding to the disinfecting influences of air and sunlight and to beating and blowing. If the sick have occupied coaches or sleeping cars fumigate them at the end of the run. In addition, regular fumigation at stated intervals is indicated simply as a prophylactic measure.

There has been applied to the Pullman service within the past year a system embracing all these measures, and one which meets the more important requirements for the maintenance of sanitary cars. Much labor is expended in removing dust, much time is given to sunning and airing; smoking rooms and closets, basins and cuspidors are washed daily with disinfectants; cars that have carried the sick are fumigated; all cars are fumigated monthly, and those running to health resorts weekly or oftener. The public has a supplementary duty and the members of the medical profession a complementary one; educate the social body to an appreciation of its own power of self-preservation.

The more indirect dangers are represented by heating, ventilation, exclusion of dust, etc. These problems are largely complicated by the varying wishes of different passengers in reference to heat and ventilation. In conclusion the author calls attention to the important part which the personal habits of the passengers have in determining the successful solution of the problems of car sanitation. Personal education of the traveling public in sanitary matters is of great importance and it is in this direction that we must look for a removal of the conditions which make traveling dangerous to health.

ALCOHOL.

Physiologic Action. Some valuable papers have been published within the last year on the physiologic action of alcohol and its relation to disease which have an important bearing on preventive medicine. W. S. Hall[1] discusses the physiologic action of alcohol and especially opposes the doctrine that it is in any proper sense a food. At least scientific precision should not be allowed to obscure the fact that even when oxidized and thus utilized by the system it may do harm. That the effects of alcohol in very small quantities may be injurious to the animal system when continued for a long time is shown by

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(1) Jour. Am. Med. Assoc., Feb. 2, 1907.

(2) Studies in Experimental Alcoholism, U. S. P. H. and M. H. Hygienic Laboratory, Bulletin No. 33, February, 1907.

experiments made by Reid Hunt,[2] who found that rabbits fed with small quantities of alcohol along with their food showed after some time an increased susceptibility to certain poisons, especially acetonitril. His investigations also showed that alcohol tends to increase the amount of products of intestinal autointoxication. Starke,[1] in a book entitled "Alcohol, The Sanction For Its Use," strongly defends the habitual use of alcohol as a stimulant, claiming that this substance is a natural constituent of the body fluids, not so harmful as is believed, and that its power of stimulation is shared by the carbohydrates to a large extent and is, when confined to stimulation, useful and harmless. He asserts that it is only when men drink for stupefaction that a tendency to increase of the quantity needed is felt and that drinking for purposes of stimulation has no tendency to pass into drunkenness or establish alcoholic habits. The injurious effect of alcohol is emphasized by E. C. Talbot,[2] who discusses the relation of alcohol to degeneration. The causation of degeneration is often attributed to alcohol when it is in fact due to heredity and the use of alcohol affords only the opportunity for degenerative traits to manifest themselves. The degenerating influences of alcohol on individuals are, however, manifest and were it not for its influence on the ovaries and testicle by which it tends to prevent the transmission of degeneration and to weed out the unfit it would constitute a serious social danger. The action of alcohol in producing degeneracy is manifested by the production of neurasthenia and it, like other causes of neurasthenia, should be removed. In the author's opinion more can be done by individual effort than by governmental regulation.

T. J. Mays[3] presents strong evidence that alcohol is a predisposing cause of pulmonary consumption and explains its action by supposing that nerve degeneration is followed by the degeneration of the organ supplied by the nerve, and in the case of the lungs this degeneration results in consumption.

(1) Alcohol, The Sanction for Its Use, G. P. Putnam's Sons, 1907.
(2) Jour. Am. Med. Assoc., Feb. 2, 1907.
(3) Jour. Am. Med. Assoc., Feb. 2, 1907.

Effect on School Children. T. A. MacNicholl[1] has investigated the effect of alcohol on school children and finds that it is the cause of a large share of the disease and abnormal tendencies exhibited by children. The extent of drinking habits among children is remarkable. The drinkers come mostly from the children of foreigners. Ninety per cent. of the drinking Americans have foreign born grandparents and great-grandparents. Apparently as a result of scientific instruction in the laws of health and the effects of alcohol, some teachers report 20 per cent. less drinking among their pupils now than five years ago.

Ten families of moderate-drinking parents show the following: First generation, 47 children, of whom 59 per cent. suffered from organic and functional diseases; second generation, 90 children, of whom 62 per cent. suffered from organic and functional diseases; third generation, 82 children, of whom 95 per cent. suffered from organic or functional diseases.

The neuropathic constitution which is so characteristic of the age in large measure arises from an hereditary basis; is extremely susceptible to disease, and succumbs to the slightest injurious influence. The psychopathic degenerative factor becomes more potent with each transmission, and induces the most serious pathologic lesions.

The alcohol habit superadded to the strenuous demands of modern life puts on each succeeding generation an increased strain. Constitutions impaired by habit or undermined by disease are bequeathed to the children. Through this cumulative transgression, disastrous consequences must result.

Conclusions. First, when money goes for drink, poverty with its attendant evils prevails, and the burdens of childhood are increased.

Second, alcoholic environment is unfavorable to the production of the best school work.

Third, alcohol, by producing a train of psychic and organic degenerations in the offspring, debases the morals and lowers the sum total of human happiness.

Fourth, alcohol, by laying the foundation of a diseased

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(1) Jour. Am. Med. Assoc., Feb. 2, 1907.

and criminal citizenship, threatens the stability of our government.

Fifth, to reduce the burdens and dangers of childhood and to improve the manufacture of future citizens, we must continue, in the largest measure, scientific instruction in the effects of alcohol and in the essentials of health; increase the number of our public gardens, playgrounds and improved tenements. But these should be supplemented by measures which will not only lessen the effects of alcohol and the other deteriorating agencies, but also purify or remove the sources from which degeneracy springs.

Alcohol in the Army and Navy. P. A. Lovering[1] presents statistics which show that there is more drunkenness in the American navy, in which liquor is not allowed to be sold to the sailors, than in the German or English navy, which allow the use of beer. The ratio of admissions for alcoholism in the three navies is:

United States Navy.....	6.95 per 1,000 men.
English Navy	.77 per 1,000 men.
German Navy	.14 per 1,000 men.

But the admissions for alcoholism indicate only partially the amount of sickness due to drinking, and very imperfectly the amount of drinking. Drinking habits are rather encouraged than discouraged by the example of officers and men, so that the young sailor soon falls into habits of intemperance. Little discipline is administered to the drunken sailor unless he is boisterous. The author believes that prohibition increases rather than diminishes the amount of intoxication. He believes that education should first be resorted to, the sailor being taught the effects of alcohol, and especially the difference in effects between the lighter drinks, like wine and beer and the spirits. He believes that beer should be sold on board ship to enforce this teaching. Proper amusement rooms and club houses at the naval ports should be provided.

C. E. Woodruff[2] considers the army canteen as an aid to temperance. He believes that the use of beer in moderation is not injurious, and supports this contention by the statement that all carbohydrates pass through the form

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(1) Jour. Am. Med. Assoc., Feb. 16, 1907.
(2) Jour. Am. Med. Assoc., Feb. 16, 1907.

of alcohol before they become utilizable by the tissues. He even suggests that eventually man will use alcohol in moderation as a necessary part of his daily food. He states that the canteen system drove out a far greater evil, the low dives which existed around the forts. The sale of beer furnishes a fund which provides certain luxuries for the soldier that relieve the monotony of camp life. The canteen is a coöperative store whose profits are divided among the companies and spent for the soldiers' food and amusement. The sooner it is restored the better, as it is a step toward temperance.

The Satellites of Alcoholism. Ch. Fernet[1] contributes a thorough discussion of the tendency to the use of other stimulants which is so generally exhibited in modern life, especially as an accompaniment of alcoholism. The abuse of aromatics, tea, coffee, spices and condiments in certain cases forms a striking form of addiction which may be confined to one stimulant or may be extended to a number of them, and generally does include alcohol. The effects of many of these substances can not be definitely made out in individual cases, because they are taken in conjunction with other stimulants which partake in the causation of the conditions found. Isolated examples are, however, found where the use of one article is so predominant that a picture of its effects can be made out. This is especially true of aromatics, especially absinthe, tea and coffee. The author describes the effects of absinthe, which is the most common aromatized drink, especially in France. This liquor deserves to be ranked among the most poisonous drinks. Epilepsy is one of its prominent effects. While the effects of these essences is shown most markedly on the nervous system, other parts of the organism do not escape. The circulation and digestion are affected, but it is hard to say how much blame is to be laid on the essence and how much on the alcohol which forms the usual vehicle for these drugs. The essences tend to produce sterility, provoke abortion and affect the offspring in an unfavorable manner.

Coffee is capable of lessening the appetite, producing dyspepsia, stimulating the circulation, probably with a

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(1) La Semaine méd., Sept. 5, 1906.

tendency to the production of high blood pressure. It is thought to have an evil influence on offspring, and in some cases to produce a marked cachexia. Tea produces somewhat similar effects, with the induction of more pronounced functional nervous symptoms. The action of spices and other condiments is not thoroughly known, but the author thinks that they have the same tendency, first to stimulate and later to depress, that is possessed by alcohol. The condiments are thought to be useful for excitation of gastric secretion, but this needs further elucidation. It has been shown that alcohol, while it increases the amount of gastric juice secreted, does not increase peptonizing power. It is possible that a similar one-sided stimulation may be produced by condiments. It is known that the spices in large doses may excite gastro-enteritis, and it is difficult to say how small a dose must be to be devoid of such an influence on the mucous membrane. How large a share these agents have in producing the gastro-enteritis of alcoholics it is impossible to say, but that they are not without injurious effects is very probable.

In conclusion, the author calls attention to the fact that many persons using these agents in a moderate way suffer from the accumulative action of several or all varieties acting on an organism too often enfeebled by alcohol and the various excesses which characterize the life of the modern man of the world. Not only is the influence marked among good livers, but it is extended to their servants, who are accustomed to partake of the good things that their masters provide, and also to the middle classes, who emulate the vices of their superiors. The exciting life of modern society is promoted and in turn promotes this excess in the satellites of alcohol. Beginning with increased and feverish activity, it goes on through a period of irritation and functional disease to a premature close from organic nervous disease or degenerative collapse.

Alcohol and Insufficient Alimentation. P. Cornet[1] draws some conclusions of an interesting character from an investigation into the nature of the food in various classes of the Paris population. He finds that many of the poorer classes live on a very insufficient diet and that

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(1) Le Progrès méd., Sept. 29, 1906.

two stimulants figure prominently in that diet which are of little nutritive value. Those are coffee and alcohol in the form of wine. Some take for breakfast only black coffee without sugar, and others make their first meal of this, with a little bread and a morsel of sugar. He states that the position of the individual in the social and industrial scale can be measured by the breakfast which rises from black coffee to *cafe au lait* and then to chocolate. He believes that the poor are driven to substitute stimulants for food in the first place by the insufficiency of their nourishment, but after the habit is established they can not be induced to give it up by instruction as to the calorific value of food, instruction which they do not understand and will not heed. Indeed, when aided by charity they will sometimes spend the money which they receive for drink instead of food.

The question of how to aid these people can not be answered by a distribution of loaves of bread, but should be met by the establishment of public kitchens which will provide for the poor an abundant and properly adjusted diet.

Adulterated Wine. E. Lanceraux[1] describes some of the diseases that are attributable to the abuse of wine, calling attention especially to cirrhosis of the liver. He is convinced that this form of disease is attributable more to the presence of sulphate of calcium and sulphate of potassium in the wines than to the action of alcohol alone. The so-called plastered wines of the southern part of France seem especially liable to produce such results. He refers to experiments made with a view to the substitution of tartaric acid or calcium phosphate for the plaster of Paris and thinks that these should be continued, in the hope that some substitute for this noxious ingredient may be found.

Temperance Instruction. The value of temperance instruction is emphasized by Martha M. Allen,[2] who gives evidence that the instruction in the public schools of the United States has had a great influence in promoting temperance. She states that the value of this instruction has induced English physicians to ask the government for the

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(1) Jour. de Med. de Bordeaux, July 7, 1907.
(2) Jour. Am. Med. Assoc., Feb. 9, 1907.

establishment of similar courses in their public schools and that the German emperor has instituted anti-alcoholic instruction in the schools of the empire. But there is need of extending this instruction to the adult population, many of whom have never had such instruction or are in danger of losing sight of the evils connected with various forms of drinking that present great temptation to the adolescent and adult population. The young girl is in great need of this instruction, as it is by means of liquors, either pure or adulterated, that the ruin of many girls is consummated. In addition, there is need of warning women, especially mothers, against the danger from alcoholic nostrums that are frequently offered to them for use for themselves in the disorders of menstruation, etc., or as soothing remedies for children.

These facts ought to be presented to the adult population by means of public lectures, classes in hygiene, etc. Such teaching should come from the medical profession, as otherwise its force is apt to be counteracted by the example of some physicians who use and advise alcohol in various forms, the ignorant laity being unable to distinguish between the proper and improper use of the drug. It is evident, says the author, that the tap-root of the nation's intemperance is the belief in the nourishing and strengthening properties of alcoholic liquors. Destroy this and how long would an intelligent people spend $1,000,000,000 a year on alcoholic drinks? But it never can be destroyed without large help from the medical profession. There should be published from time to time strong articles against alcohol by prominent physicians, and by many of them. The people have a right to expect that their medical advisers will warn them against whatever is injurious to physical health and strength.

W. S. Hall[1] says that as nature study includes the physiology of living forms and the rules of hygiene are important corollaries to the principles of physiology and should be presented in their logical relations, the physiologic action of things in such common use as chewing gum, tea, coffee, tobacco and alcohol should be discussed as freely and as fully as the action of rice, eggs, butter and water.

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(1) Jour. Am. Med. Assoc., Feb. 9, 1907.

Having thus demonstrated that it is pedagogically proper to instruct pupils regarding the action of alcohol and other narcotics on the body; that it is pedagogically proper to teach pupils the elementary facts of hygiene, including the dangers of indulgence in stimulants and narcotics, we come to the question at issue: What is the value of instruction regarding alcohol?

In the first place it is universally admitted that the use of alcohol is dangerous; further, that a knowledge regarding danger is valuable. Education is the great reforming influence. Knowledge is the safeguard of society. The present generation is protected against the ravages of cholera, of smallpox and of yellow fever through a widely disseminated knowledge on the part of the people regarding the general causes of these diseases and the rational method of checking their spread. If the future generations are to be protected against the appalling ravages of "the white plague" and against the degenerating influences of that curse of man, alcohol, it must be similarly through a wide dissemination of knowledge regarding them. Therefore, educate, *educate*, EDUCATE. Let the children, the youths, the young men and women know the whole truth, and the value of that knowledge will make itself manifest through a rapid decrease in the ravages of tuberculosis and alcoholism.

If boys and girls are taught the dangers of the moderate use of alcohol few of them will later suffer from the effects of its excessive use.

The Saloon as a Disseminator of Disease. Aside from the injury inflicted by alcohol, the saloon deserves the attention of the sanitarian for several reasons. In the first place, it is a provider of food as well as drink, and the possibility of the conveyance of disease by insanitary or unwholesome food is only too well known. The fact that the food is eaten cold and is frequently handled indiscriminately by the customers increase the danger of contamination. In addition, the frequent mingling of all sorts of people and the fact that the saloon easily becomes a loafing place where tramps and others affected with various contagious diseases congregate makes the dissemination of various infections through the agency of the saloon very easy. The sanitary character of saloons varies greatly, but needs supervision. The *Medical Record*[1] calls attention to the fact that the sanitary relations of the public houses of London have been the subject of discussion in the *Lancet,* and that the transmission of pulmonary tuberculosis by this agency has been proved more or less conclusively. Diphtheria and other infectious diseases, syphilis and almost all forms of skin diseases are also liable to be spread in this way. This journal comments on the insanitary character of the private bars and the less satisfactory condition presented by the public houses of Great Britain than prevails in America, and especially congratulates the United States on the rarity with which women drink in saloons.

Alcohol and Insanity. According to *La Semaine Medicale* (July 10, 1907), the alcoholic insane of France constitute 13.88 per cent. of all insane, and the proportion of alcoholic insane has increased 57 per cent. in the last decade.

VENEREAL DISEASES.

Prophylaxis. R. A. McDonnell[2] writes as follows regarding the use of personal prophylaxis after exposure:

Gonorrhea can almost certainly be prevented by injecting a one per cent. argyrol or a ten per cent. solution of silver nitrate into the fossa navicularis within a few hours after exposure. Syphilis can often be prevented by soap and water, followed by ablutions with some antiseptic. Ulcera mollia may be prevented in the same way, but the precautions must be taken immediately after the exposure for the last two diseases.

It seems to the writer that such knowledge as the foregoing should not be put into the possession of the layman except in unusual cases. A healthy fear of contracting disease will act as a deterrent, and total avoidance of danger is the thing we are aiming at. If the layman is obliged to go to a physician for such treatment that will be some trouble and expense to him and will be salutary.

In the German army, however, the plan of instructing

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(1) Medical Record, Oct. 6, 1906.
(2) Yale Med. Jour., June, 1906.

the soldiers in the use of prophylactics has reduced enormously the number of men affected, and others may disagree with the writer about the advisability of teaching the layman these things.

Syphilis. *Le Progres Medical*[1] notes the claims of Maissoneuve and Metchnikoff that the inunction of calomel will prevent the inoculation of syphilis from becoming effective and cautions against too hasty conclusions on so important a matter. The first experiments of Metchnikoff were made on apes with success, but as apes take syphilis with difficulty in any case it is reasonable to desire more conclusive evidence before concluding that the results of such investigations can be transferred to man. At last Maissoneuve boldly offered himself as a subject for experiment, and allowed an inoculation of syphilitic virus to be made followed by the calomel inunctions. No symptoms developed from the inoculation, and therefore the author and the subject of experiment rushed into print, at first in the public journals and eventually, on the delivery of the thesis of Maissoneuve, into the medical journals, with the new idea of a prophylaxis of syphilis. *Le Progres Medical* warns its readers that more experience is necessary before yielding credit to so novel a mode of protection against this formidable disease. The medical world has had many opportunities to see the consequences of too hasty adoption of supposed medical discoveries. It cites the example of Jenner, who waited twenty years before publishing his great discovery. Perhaps, however, so great caution is not so much needed in this day, as an asserted discovery is subjected immediately to so many tests that its genuineness is likely to be well established or its worthlessness discovered before any great harm can come from its premature publication.

Duty of the Physician. From the mass of literature on the subject of prevention of venereal diseases the following may be gathered as the consensus of opinion as to the obligation resting on the medical profession. Various authors have discussed the subject under the heads of publicity for venereal diseases and what shall we teach the public concerning venereal diseases? There exists still some un-

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(1) Le Progrès Médical, July 28, 1906.

certainty regarding the actual peril from these diseases. By some they appear to be regarded as incurable and ineradicable pests which are destined in a short time to destroy civilization, if they do not annihilate the human race. From the calculations made it is variously estimated that 90 per cent. of adult males are affected and that a large proportion even of innocent women are infected by their husbands, so that from 30 to 75 per cent. of the diseases of women depend on such infection. That the medical profession has not appreciated the danger from these diseases is true, but without doubt in the enthusiasm of advancing the cause of morality and health the prevalence of these diseases has been considerably exaggerated. As they have existed since the dawn of civilization they would have destroyed mankind ere this were there not some counteracting influence in the human organism or in society.

An evident duty of the medical profession is to thoroughly acquaint itself with the truth in this matter. Some statistics collected by Erb[1] seem calculated to moderate the extreme conclusions reached by others. He found that of about 2,000 of his patients whose sexual history was carefully investigated 48.5 per cent had had gonorrhea, while 45 per cent. denied the occurrence of either gonorrhea or syphilis. The infection of wives was much less extensive than some other statistics would lead us to suppose. In this connection it may be remarked that the proportion of previous infections in the clientele of a noted physician would undoubtedly be larger than in the community at large, as many persons who had never had venereal disease would have no occasion for medical advice.

The second duty that may be urged on the physician is more thorough treatment of these affections. They should either be placed at once in the hands of specialists or treated by the general practitioner as very serious affections. The practitioner should take the opportunity for thorough instruction of the patient in hygienic matters, and especially in regard to the danger of spreading the disease. Inasmuch as each patient has probably acquired his disease through ignorance he should be appealed to to

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(1) Muench. med. Woch., 1906, LIII, p. 2329.

help spread among his companions a true appreciation of the gravity of the evil.

Education of the Public. The physician should attempt to educate the people, first his individual patients, second his immediate acquaintances and third the public generally. The education of the patient is helpfully carried out by leaflets such as have been issued by the State Board of Health of Vermont.

CIRCULAR OF INFORMATION ADOPTED BY THE CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

Issued by the State Board of Health of Vermont.

We hand you this leaflet believing that you would not willingly communicate your disease to some innocent person.

Many fail to comprehend the exceedingly disastrous results that often follow these diseases. Many cases of blindness, complete disability, and not infrequently death result from them. Gonorrhea is one of the most frequent causes of diseases peculiar to women. So serious a menace have these diseases become to the public health that the medical profession and sanitarians in all countries have become alarmed; and are advocating measures for their prevention.

Syphilis (or pox) is especially a disease from which innocent persons may suffer as it usually produces sores in the mouth or on the lips, hence may be conveyed by kissing, drinking from the same cup, or using anything which has been put to the lips or into the mouth of one affected by the disease.

These diseases are often communicated when the patient thinks he has recovered. Hence marriages contracted at this time of the disease result in much unhappiness, and often in the death of the wife. To protect yourself and others, we earnestly advise the following.

IN THE INTEREST OF PREVENTION OF YOUR DISEASE.

What to do and what not to do, to get well and to prevent giving your disease to any other person.

Follow strictly the advice of your doctor, use no other treatment.

Remember that it takes a long time to entirely recover.

Carefully wash your hands with soap and hot water whenever you handle the private parts.

Do not have intercourse and avoid all sexual excitement until your physician says you are completely cured. Be especially careful not to rub your eyes with your fingers.

Do not allow any person to use any cup, glass, spoon, fork or anything that you have put in your mouth.

Do not kiss anyone or wipe the face of a child with a handkerchief you have used. Always use a separate towel. Burn all cloths or cotton soiled by discharges.

The education of the public may be best carried on by societies, of which the Society of Sanitary and Moral Prophylaxis has already done good work. J. M. Anders[1] sums up his views on this subject as follows: The most effective work, however, is to be accomplished through organized effort, in which the medical profession must bear the "heat and burden of the day" in the matter of investigating existing conditions and indicating the means that promise to minimize and finally to eradicate, if possible, this well-known evil. The profession should adopt a general plan of action if it would hope to execute a winning crusade against the social evil, and I would respectfully suggest the individual parts or segments that should enter into the skeletal outline of such a plan, omitting the details of their articulation for want of space:

1. A campaign of education, which is to be extended primarily to the mass of the medical profession. This should embrace (*a*) agitation through coöperative effort on the part of high-class journals, medical writers and medical organizations, with a view to giving enlightenment to that profession, and (*b*) the proper training of medical students not only in the wide-spread significance of the physical ailments resulting from immoral indulgences, but also the moral responsibility involved in this gravely menacing evil.

2. The education by the medical profession of the people, more particularly the rising generation, either directly or with the aid of the parents.

3. The medical profession should invite the coöperation of sanitarians, statisticians, philanthropists and public-spirited citizens in general.

4. In order to carry out effectively this work a perfect and complete organization of professional and lay forces animated by a unity of purpose and action is absolutely essential.

5. Governmental supervision, which should partake of a sort of parental care or oversight, and special municipal regulations, are to be recognized as auxiliary agencies of considerable value in suppressing the social evil.

Dependent Children. W. L. M. Coplin[2] calls attention

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(1) Medicine, November, 1906.
(2) N. Y. Med. Jour., June 29, 1907.

to the importance of venereal diseases with reference to dependent children. He says: "A sadly neglected group of dependent children, forced into public or private institutions, the inmates of day nurseries and orphan asylums, the deserted babe, born parentless, and even those tenderly committed to hospitals for the sick infant, need a closer attention and more strict supervision than officialdom has bestowed upon them. The epidemics of gonorrheal vaginitis that run their devastating course among these unfortunates are the blackest crimes that besmirch the escutcheon of noble charity. Year after year, often in the same institutional ward, this plague reeks in its rottenness. It is as preventable as intoxication and as avoidable as lying, but remains unstayed. Careless nurses and negligent internes merit corporal punishment, and the employment of unskilled attendants for these poor charges is a crime for which no adequate penalty has been devised. I knew an institution in which seventeen foundlings were given gonorrhea in a single month, and throughout this broad land of ours yearly hundreds, probably thousands, are started in their struggle for life with the crippling burden of diseased annexa for which neither they nor their parents are to blame. Over these institutions no adequate supervision is maintained; there are exceptions, but they are few and, as a rule, unimportant. While we are soliciting laws for the protection of those able to care for themselves if they so desire let us not forget what may be done for the defenseless."

The author uses the following pertinent language regarding the fight against social disease: "In this contest against social disease let us not forget that we are engaged in no dream of yesterday, no contest born of a present decade, but a crusade older than that of Walter the Penniless against a scourge mature and militant when the walls of Babylon were young. No legislative act, no ordinance of councils, no decree of officialdom can accomplish a noteworthy success until layman and expert have received and accepted the established fact that venereal disease is both avoidable and preventable, and that each citizen is, within himself, an armored and invincible host. The enlightened public opinion of progressive civilization has suppressed bigamy and has corrected the legal wrongs of the wife and mother, and when, in its might, the same agent resolves to protect her health from the vice of all time—social disease—greater advances may be made, but until that time shall have arrived such organizations as the American Society of Sanitary and Moral Prophylaxis must, without ceasing, push forward the educational movement on which, in my opinion, ultimate victory to an immeasurable degree must depend.

I can not endorse (1) the medical inspection of prostitutes, (2) the licensing of prostitutes, (3) the medical supervision of brothels, (4) the medical inspection of women contemplating marriage and (5) the obligatory registration of all cases of venereal disease.

It would seem that, judiciously administered, the following measures in some form might be given extended trial:

1. A more detailed supervision of the sale of alcohol, particularly to minors.
2. The suppression of the flauntingly conducted brothel.
3. The custodial care and treatment of those who knowingly propagate venereal disease.
4. Proper supervision of institutions for infants.
5. As a prerequisite to the marriage license, the medical inspection and certification of males.
6. A most exhaustive educational crusade directed toward training the minds of the young and enlightening adults of both sexes, and especially parents."

The Medical Secret. W. A. Purrington[1] sums up the *legal aspects* of the medical secret as follows:

1. There is no common law duty on the physician to keep sacred what he has learned in attending his patients, and he is required by law to reveal it as a witness in court.
2. In New York, and about half of the other states, he may not testify to what he has learned in his professional capacity that was necessary to enable him to act in that capacity, although he may be compelled to reveal all secrets he may have learned that were *not* necessary to enable him to treat the case. He is, moreover, compelled to testify

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(1) N. Y. Med. Jour., June 29, 1907.

under certain circumstances in criminal cases; e. g., as to the cause of death of the victim of murder; and he is also expressly required by the laws and health ordinances to report contagious diseases.

3. The privilege belongs to the patient, not to the physician, and the latter may be compelled to testify as to the professional relation when the privilege is properly waived.

In regard to the *ethical side* of the question, the author calls attention to the fact that one is justified in taking life to prevent the perpetration of a crime involving a felony or a great personal injury. If he who communicates a venereal disease inflicts a bodily injury to the person and a wrong to the state, and if the law justifies homicide committed in resisting great bodily injury, then it would seem justifiable even to kill in order to prevent willful infection, and it would be justifiable except for the fact that homicide is permitted only as the last resource; not when other means of resisting the evil are at hand. So the author says that it seems to him that a physician who knows that an infected patient is about to carry his contagion to a pure person, and perhaps to a person unborn, is justified both in law and morals in preventing the proposed wrong by disclosing his knowledge if no other way is open. If A comes to his lawyer and says, "I have committed a crime, defend me," the secret is kept. It is a tale of the past. But if he comes saying, "I intend to commit a certain crime," it is the lawyer's duty to prevent him. There is no secrecy, except when the confidence is given for legitimate purposes.

The author concludes: "Standing here to expound the law, without giving any opinion on the wisdom of making such reports as a practical method of modifying the evil, I have only to say that if such disclosure is the best way of dealing with the problem the law does not forbid, but rather commands it."

PROSTITUTION.

The control of prostitution in itself is a social and legal question, but the demonstrated fact that the prevalence of venereal diseases is due to prostitution, and that there can be little hope of diminishing disease without measures which will lessen the amount of vice has induced medical men to discuss the causes and remedies for this condition. The most important articles are by L. Weiss[1] and C. Chassaignac.[1]

The causes of prostitution are numerous as enumerated by these authors. It is generally agreed that prostitution is as old as civilization, and it is claimed by Chassaignac that it is due to civilization, which necessitates abnormal sexual lives. He makes the following applications of this fact:

1. Men, guided by the prevalent usages of civilization, either can not or will not marry when the natural sexual impulse has attained its proper force and calls for mating.
2. On account of the usages and necessities of civilization, when men marry, or women, too, taking "man" in the generic sense, they either can not or will not follow the laws of natural selection.
3. The unnatural sexual lives that are often lived, due to the usages of civilization.

Weiss considers the question from the point of the influences acting on women, and finds the cause in various industrial conditions, among which he places the insanitary conditions under which the poor live, the hardships of industrial life, child labor, employment agencies and the deception practiced on women to bring them into a condition of virtual slavery. No special remedies are proposed, except education, which will hinder the tendency to illicit intercourse among men and prevent girls from entering the life.

Regulation. R. A. McDonnell[2] proposes the following law to aid in the suppression of venereal diseases:

1. Voluntary enrollment of prostitutes, under proper restrictions as to age, condition of health, previous history, etc.
2. Medical examinations at proper intervals, by physicians regularly appointed, of all enrolled.
3. Compulsory hospital treatment (at their own expense) of all found diseased.

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(1) Jour. Am. Med. Assoc., Dec. 22, 1906.
(2) Yale Med. Jour., June, 1906.

4. Imprisonment of all clandestine prostitutes convicted of this offense.

5. The appointment by each police board of an officer, who shall receive privately all complaints against diseased prostitutes, whether enrolled or clandestine, with power to investigate, and, when found necessary, to isolate such cases. This officer shall also receive complaints privately against any man accused of conveying a venereal disease and have the power to compel him to have proper treatment.

6. It shall be a misdemeanor, punishable by a heavy fine or by imprisonment, for either a man or a woman to convey a venereal disease to another person.

L. Weiss[1] advises absolute non-interference unless public decency is interfered with. W. E. Harwood[1] details the methods adopted for the repression of venereal diseases in a mining town in Minnesota, where the houses of prostitution were located on the property of the company and the inmates practically under its control. Considerable reduction of the venereal morbidity appears to have resulted, but the number of cases is too small on which to base a positive conclusion. Harwood concludes that it is possible to lessen venereal diseases:

1. By thorough, frequent inspection by competent men of all houses of prostitution.

2. By placing acutely diseased women in a hospital and giving them the treatment their diseases demand, which would also facilitate the closer study of venereal diseases.

3. By the exclusion from the houses of diseased men.

4. By the registration of diseased women with the keepers of the houses.

5. By coöperating with the keepers until the present periodical extortion system is a thing of the past.

The methods used to combat venereal disease in France are described by T. Tuffier,[2] who says that the system in use in France is composed of two separate branches—absolutely different—the police and the medical service. Inmates of registered houses are examined once a week and the registered free prostitutes once in two weeks. In addition, there is also clandestine prostitution, which consti-

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(1) Jour. Am. Med. Assoc., Dec. 22, 1906.
(2) Jour. Am. Med. Assoc., Oct. 20, 1906.

tutes a third of all diseased women. The system is violently attacked, and it is evident that it is not remarkably successful. Everybody believes that the system should be modified.

German Police Control. F. Bierhoff[1] gives a detailed account of the measures for control of prostitution adopted by the police in the various cities of Germany. The cities of Germany may be divided into two general classes: Those in which the prostitutes practice their trade in houses known and *tolerated* by the police—the so-called public houses of prostitution, and those cities in which no houses of prostitution are tolerated officially—cities in which all prostitution is "secretly" practiced, and is of the so-called "free" character. The laws of Germany expressly forbid any licensing of public houses of prostitution. To use the words of several of the police officials in the different cities: "In no instance is a house of prostitution licensed. We recognize the existence of the evil and tolerate it because we know by experience that attempts to stamp it out lead only to worse evils. We do our best, however, to check, so far as possible, the spread of contagious diseases by these women and to prevent the molestation of the public by the prostitutes."

Hamburg. The policy of segregation is followed here. The prostitutes are permitted to live only in certain streets, specified by the police regulations, and in certain houses known to the police as regular houses of prostitution. These streets are, while in the center of the city, somewhat removed from the main arteries of traffic, and are, in reality, rather alleys than streets. They are remote from the purely residential parts of the city, and there is nothing about the appearance of the street, or of the houses, which might in any way disclose the character and nature of the traffic which goes on therein. The only differences in the character of the different streets in which this traffic is permitted are in the furnishings of the houses and the attractiveness of the inmates, according to the differences in social and financial status of the visitors to these houses.

Certainly in this city, as in all the other cities, only a small proportion of the women who follow this trade come

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(1) N. Y. Med. Jour., Aug. 17, 1907.

under the control of the authorities, for here, as everywhere else, by far the larger proportion of the prostitutes belong to the so-called "secret" class.

For purposes of control, the prostitutes who are known to the police authorities to follow this trade are classed under two headings, as coming under: Class 1, strict control; examination twice a week. Class 2, modified control; examinations take place every two weeks, or at even longer intervals, according to the discretion of the authorities.

Under the first heading come those who live in houses of prostitution or who ply their traffic on the streets. Under the second heading come those who have some regular employment and who do not give themselves up to prostitution as their sole means of livelihood. As a third class might be mentioned the control examinations by the police medical officers of men who are accused of having infected some woman with venereal disease, whether she comes under the heading of class 1 or 2. The city of Hamburg, so far as known, is the only city in Germany in which the suspected male source of infection is amenable to an examination.

Contrary to the general supposition, the treatment of these women by the police is kind and considerate, and there appears to be no reason to fear that the application of the regulations will result in the arrest of an innocent woman. Arrest is resorted to only after repeated warnings have been given. The examinations in Hamburg are thorough, microscopic investigation of the discharges for gonococci being practiced.

Should a female, whether she be under police control or not, accuse a man of having infected her with venereal disease the man in question receives a communication from the police authorities inviting him to appear upon a stated date at police headquarters for examination to determine whether or not he is infectious. This invitation is sent without regard to the individual, to his position or to the class in society in which he may move. It is a secret communication, its contents known only to the police officials in question and to the man himself. The examination is conducted in secret and should he be found free of contagion he is at once discharged from surveillance. Should he, however, be found to be diseased, then he is given the alternative of reporting within three days and presenting a certificate from a reputable physician stating that he is under treatment by this physician, and intends to remain under treatment and observation, or, should he be unable to do this, he is held and sent to the city hospital for compulsory treatment until such a time as the hospital authorities consider him no longer dangerous to the community. This last mentioned feature of the examinations was what impressed the author most of all in the methods employed in the city of Hamburg.

In addition to being required to report any disease which they may discover on their person, to appear at the examinations and to obey the orders of the physicians and the police, these women are forbidden:

1. To spend the night with or have relations with men in houses other than those which are permitted by the police, or to roam about without a dwelling.

2. To have another person in their dwellings in board; to have children, either their own or those of strangers, with them; or to keep a servant under twenty-five years of age.

3. To allow immature persons to enter their dwellings or to have sexual relations with them.

4. To appear at the window or at the housedoor in the house occupied by them, or in any other house, or to attempt to entice men by knocking, by calling or in any other manner.

5. To address men on the street, to entice them by nods or other gestures or to give them hints in any manner.

6. To appear in indecent or striking ("loud") clothing.

7. To remain after 11 o'clock at any other place than their own dwellings.

8. To traverse the streets and squares * * * (here follows a list of the main streets and squares).

9. To visit * * * (the principal theaters and amusement resorts).

10. To enter the resorts lying within two hundred and fifty metres from their dwellings, such as * * * (cafés, restaurants, etc., adjacent to the principal promenades or squares).

11. To ride in an open wagon.

12. To make use of any parts of the bathing institutions (such as swimming tanks) other than those cabinets arranged for single bathers.

13. To make use of, or to permit the use of, any article calculated to mislead the examining physician.

14. To keep a lover (*Zuhalter*) or to visit the dwelling of such or to receive a lover in their own dwellings.

If a female, under control, makes it apparent that she wishes to give up professional prostitution and to take up some honest mode of life specified by her she is to be temporarily released from the observance of the regulations of the police, and in case her behavior during a period, which is to be specified in each instance, gives no ground for the belief that she will still follow the profession of prostitution, then she is to be definitely released from the control which has been put on her.

Breaches of these rules are punished with arrest up to six weeks and transference to the national police authorities for the purpose of incarceration in a workhouse up to the period of two years. As a result of these regulations Hamburg is outwardly more orderly than the Prussian suburb, Altona, where houses of prostitution are not allowed.

Berlin. In Berlin no houses of prostitution are allowed, but prostitutes live in any part of the city, living alone or with one other female. Rigid control over prostitution is made impossible here because any girl who can show that she earns by more or less honest labor a ridiculously low sum of money weekly (a few marks) can not be held as being a public prostitute, and thus escapes inscription and police control. To what extent this regulation nullifies the possibilities of control may be seen from the fact that while there are 6,000 inscribed on the rolls as public prostitutes it was stated to the author on good authority that more than 60,000 prostitutes ply their trade in the streets of Berlin without being under police control. The regulations are similar to those in Hamburg. The woman, when first enrolled or if subjected to examination in consequence of arrest, is examined by a female physician. If the woman be under age she can not be subjected to police control, but her parents or guardian are notified and required to take steps to make her refrain from immorality. If these measures fail she may be placed under police control after due trial.

Leipsic. The regulations at Leipsic seem to be similar to those in Berlin, but, according to Bierhoff, the examinations are somewhat defective, and he found the city hospital filthy and the attendants exceedingly slipshod and careless.

Dresden. This city, like all the other cities of Saxony, forbids the existence of regular houses of prostitution. It is a fact, however, that houses of prostitution do exist unknown to the police. The control of the police is very thorough, but this appears to result in a comparatively small registration. In spite of the large number of inhabitants in this city there are only 300 prostitutes inscribed on the police lists. The number of clandestine prostitutes is not known, but it is entirely out of proportion to the number of those standing under control. The examinations are very thorough, and the author was informed that during the three months which had elapsed since the modern, scientific methods of examination had been introduced the number of cases of gonorrhea among the inscribed prostitutes had fallen off over 33 per cent. This reduction is, to the author's mind, a most powerful argument in favor of microscopic examination for the existence of gonorrhea among the prostitutes and for thorough and scientific examination. The prostitutes are examined at weekly intervals, and where a suspicion of gonorrhea exists examinations may be made daily. The regulations governing the women under police control are similar in tenor to those of the other cities.

MARRIAGE.

Safety of the Marriage Contract. The question of safety in the marriage contract is discussed in connection with the prevention of venereal diseases by Prof. A. Dührson, W. L. Howard and A. H. Burr.[1] Burr advocates a medical certificate as a preliminary to the obtaining of a marriage license. Such laws have been passed in some states, as North Dakota, Michigan and Indiana. He notes

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(1) Jour. Am. Med. Assoc., Dec. 8, 1906.

as a defect of the Indiana law that it make no provision for medical examination, while requiring a statement from the man intending to marry. He regards the North Dakota law as the best. This provides for an examination before a medical board of three physicians, appointed by the county judge.

E. L. Keyes[1] discusses the propositions which have been made, with a view to securing an absence of venereal disease in the parties to the marriage contract. He finds six propositions that have been seriously put forward suggesting means applicable to pre-nuptial sanitation. One of these is general; three are direct and apply immediately to the contracting parties contemplating matrimony; two are indirect, their aim being to protect the individual long before matrimony has become a question by striving to take away from him false hopes of speedy and permanent cure in case of personal infection and by furnishing to him sufficient wisdom to beget prudence and awaken solicitude. The propositions are briefly as follows:

First, the present law regarding privileged communications shall be abolished. The author comments that the law depends on the sentiment in the community and will be changed when that sentiment changes.

Second, it is expedient to institute legislation which shall call for a sanitary guarantee of the physical status *(quo ad* the venereal diseases) of any one contemplating matrimony as a condition for issuing the marriage license. The guarantee to be either from the family physician or from a state examiner appointed for the purpose. The author makes six objections to this scheme:

1. Such an examination must apply to the woman as well as to the man.
2. The examination would fail to protect on account of latency of the disease, fraud or infection subsequent to the examination.
3. If the family physician were called on to furnish the credentials the young man, knowing this, would never apply to his family physician when he acquired a venereal disease.
4. If any indifferent physician could give the certifi-

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(1) N. Y. Med. Jour., June 29, 1907.

cate charlatans would establish bureaus for the purpose of issuing such certificates.

5. Many errors in diagnosis would be inevitable.

6. The appointing of specially qualified examining physicians for every village in the state would be impossible.

Third. A suggestion has been made to the effect that anyone inflicting a venereal disease on another, whether knowingly or innocently, shall be punishable by law. This opens the door so widely to blackmail and would be so seldom made use of by the innocent and modest afflicted one that it needs little comment.

Fourth. The final, direct proposition is the instructive leaflet prepared by Darier and presented to the French Society by Jullien as the outcome of the work of the committee appointed to devise ways and means for the sanitary guarantee of matrimony. This has not yet been put into practical use.

In the author's view the matter must rest on the honor and loyalty of the parties themselves, and inquisitorial regulation of sexual matters involves too much interference with the individual liberty for it to be put into operation successfully. The final propositions which the author approves are the suppression of all advertisements promising a safe and speedy cure of venereal diseases and the extensive publication of a knowledge of the nature of these affections.

Consanguinity. G. Brassart[1] reaches the conclusion from his investigations that consanguinity in marriage has not the injurious influence usually attributed to it. The result of the marriage of nearly related individuals is to intensify both the good and the bad traits due to heredity, but there is no mysterious influence rendering these marriages insanitary.

ILLEGITIMATE PREGNANCY.

L. T. Royster[2] considers the problem of the woman illegitimately pregnant and the causes, treatment and prevention of illegitimacy. The causes he groups under the heads

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(1) These de Paris, 1905.
(2) N. Y. Med. Jour., June 8, 1907.

of ignorance, imprudence, passion, seduction and a degenerating tendency to vice. Several of these causes are frequently combined, and they are aided by other influences, such as poverty, improper literature, improper companions, public music hall and dance houses.

In regard to the care of these unfortunate women the author regards marriage with the father of the child as the step to be encouraged and secured whenever possible. When this can not be accomplished the mother should be shielded from disgrace by all practicable means. If the family can not secure the protection at home she should go to a good institution in a large city. She should be provided with a suitable occupation and trained to self-support. She should be encouraged to remain in the institution until the child can be weaned, unless it can be earlier adopted into a good family. As such children are frequently below the normal power of resistance the larger institutions are a poor place to rear them and adoption is preferable. The prevention of this evil involves the removal of the causes by proper home, school and religious training. Supervision of the literature of the young is advised.

EDUCATION.

R. W. Parsons[1] sets forth with great emphasis the injurious influence exercised by the attempt to educate girls at the expense of their health. He claims that such studies as Latin and Greek and the higher mathematics are of no value to women, and hence should not be included in the course of study. The hours and the number of subjects taught, he thinks, require too much of the girl's energy; besides, the higher education somehow seems to deprive her of her womanly qualities. Of this assertion he presents no proof. Educated women are sometimes queer and unfitted for home duties. They do not inspire in men the sentiment of love which they should. In consideration of these evils he proposes the following measures of reform:

1. The public must be thoroughly aroused to the dangers threatening the physical and mental health of school children under the educational system as now conducted,

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(1) N. Y. Med. Jour., Jan. 19, 1907.

particularly in our public schools. Parents should be awakened to their responsibility in regard to the welfare of their children. No radical reforms will be made until parents, being convinced of the existing evils, unite in making vigorous protests against existing conditions and demand that a thorough investigation of present methods be made with a view to correcting the defects which have gradually crept into our educational system, and thus to materially diminish the dangers to the health of school children. State and local boards of education should be asked to hold conferences to discuss the ways and means of remedying the existing evils. The advice of eminent physicians should be sought, and their opinion in regard to safeguarding the mental and physical health of school children should be carefully considered.

2. Parents should be urged to permit their girls to develop according to nature's laws. By encouraging young girls to take sufficient exercise in the open air and sunshine a marked improvement will be noted in the general health.

3. Light calisthenics and outdoor games and sports are of great value in improving and maintaining the bodily health. On the other hand, certain kinds of gymnastic work, such as jumping, vaulting, lifting, etc., should be carefully avoided. Girls should not engage in sports or games which involve severe and prolonged muscular strain.

4. A thorough training should be given in the elementary branches of knowledge, such as reading, writing, spelling, arithmetic, geography, history, etc., cutting out all non-essentials and such branches of study as could be of little or no practical use to the average woman. Of what use can the study of Latin, Greek, civics, political economy, the higher mathematics, etc., be to the average young woman, who in a short time after leaving school marries and assumes the duties of housekeeping. Rather allow our girls to grow up strong and robust and to develop into womanly women. Avoid as far as possible any studying after school hours and devote some time each day to the training of the young girl in the duties pertaining to the life in the home.

5. Girls should not be allowed to enter school as early as is the custom at present, the school hours should be

shorter (8:30 a. m. to 2 p. m.), with longer recreation periods. Only those children who show a marked talent for music or art should be allowed to take instruction in these branches during the school year, and then only once a week.

6. If proper instruction in the domestic economics can not be obtained at home such instruction should be provided in the public school. A certain number of lessons each year should be given to our girls by competent teachers in plain sewing, plain cooking and the sanitary methods to be used in the care of the home.

R. G. Freeman[1] considers the following as requisites for the physical welfare of children: Ample rest; 10 or 12 hours in bed and perhaps a nap after the midday meal. Fresh air; several hours out of doors and 1,500 cubic feet of air space in the house. Freedom from dust and exposure to disease. Freedom from worry and fatigue. The last has been investigated by Christopher, who found that the activity of school children diminished rapidly from the time they entered school in the morning until they were dismissed at noon. This was shown to be due to the application to their studies and not to confinement in the schoolroom. The experiments of Freeman in the same line showed, however, no marked fatigue where the exercises were broken up into fifteen-minute periods.

Freeman summarizes as follows the conditions required for healthful public school life: Our ideal private school should be out of town, but within easy reach of the homes of its patrons. It should have short periods of study, separated by frequent recesses, and ample time allowed for a substantial midday meal, taken at leisure. The harder work should be given during the morning hours, the lighter work in the afternoon hours, to be followed by play out of doors, in which all the children must take part.

The ideal public school should take the children as many hours a day as practicable. They should come to school as early as 8 in the morning and enjoy an hour's outdoor play under supervision before undertaking their tasks. The periods devoted to each subject should be short, with frequent recesses. At noon a nutritious but simple meal

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(1) Medical Record, July 28, 1906.

should be furnished them. In the afternoon the easier subjects, the manual work and the preparation for the lessons of the next day should be taken up. Opportunity for out-of-door exercise under supervision until late in the afternoon should be provided.

In both private and public schools a much more severe examination for any evidence of contagious diseases should be made than at present. All children with colds should be absolutely excluded from school, and children with eruptions should be excluded until the eruption has been pronounced by a competent person noncontagious in character.

The School Physician. In an article dealing with the conditions of the schools of Schwabia and Neuburg, Wille[1] discusses the expense of school inspection, the character of physicians who should be chosen for such purpose and the need of more thorough organization of this important work. While the work of school inspections requires special knowledge of some points in the various special fields of medicine so that it might be claimed with equal propriety that the school physician should be a sanitarian, a dentist, ophthalmologist, a specialist in mental diseases, etc., Wille concludes that the general practitioner has the greater claim because his knowledge of general conditions and of the common needs of the people fit him for a broader view and more varied service than the specialist can commonly command. In larger cities where there are specialists they can be employed for the necessary special examinations, but where this is difficult the work should be assigned to a general practitioner who can in a short time familiarize himself with the special knowledge which is required to fit him for the office of school physician. It is a somewhat more difficult problem to decide whether the school physician should be a special official or a practicing physician. A practitioner is likely to meet with difficulties connected with his decisions as school physician which may injuriously affect his practice and be more of a detriment than can be compensated for by the small salary attached to the position. As a general rule it will be better that the physician who holds this position shall be

(1) Muench. med. Woch., Aug. 7, 1906.

an official whose time is given to such work and who should, if possible, be either himself the public health officer or a subordinate working in close touch with the health office.

Medical Inspection. The importance of medical inspection of the pupil, not only for the ordinary infectious diseases, but for the general physical condition, for defects of sight, hearing, and development, and for the discovery and eradication of the minor contagious diseases, such as the parasitic diseases of the skin, is receiving a growing recognition by the public and by the sanitary authorities. Massachusetts has a law making obligatory the physical examination of each child at least once during the school year. A circular has been issued by the board of health giving instructions and suggestions to medical inspectors and teachers by which they will be able to prosecute their duties more successfully. The careful observation expected of the teachers by these regulations makes this class an important factor in the preservation of the health of the children under their control.

S. A. Knopf[1] in an address delivered before the American Academy of Medicine, June 4, 1906, considers the questions arising regarding the sanitary relations of the kindergarten. The same rules regarding exclusion of children with contagious diseases should be enforced in these schools as in the public schools for older children. Knopf believes the list should include even a common cold which often means nothing less than influenza. Two hours of instruction daily are enough between the ages of four and seven. When the child enters the public school a physical examination should determine the absence of infectious diseases, of defects of hearing and sight, and diseased conditions of the respiratory organs, more particularly of the nasopharynx. The general development should be noted and frequent re-inspection should be made to detect the beginnings of disease or evidence that the school life is in any way detrimental to the health of the child. The author gives a large amount of statistics showing the frequency of diseases needing medical attention among the school children examined in New York City.

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(1) Med. Record, Sept. 15, 1906.

The curriculum of the school for all classes should be so arranged as not to tax the mind and nervous system to the detriment of the physical development. Over-taxing the mind and nervous system of a girl at the age when she enters womanhood should be carefully avoided. The child labor required by many parents at home when the child is attending school is as criminal and disastrous as it is in many of our factories. Care for the nutrition of the children may necessitate the giving of free food. Knopf does not recommend free dentistry but thinks the attention of parents should be called to defects in the children's teeth. Provision for out-door exercises and nature study should be made. A swimming tank should be a feature of every school so that the children could be prepared to escape disaster on the water. He thinks that if the children on the ill-fated Slocum had known how to swim many of them would have escaped.

The Health of the School Child. In an interesting paper L. H. Gulick[1] describes the efforts of the board of education of New York to conserve the health of the school children. Ventilation, lighting, heating, and seating of the school rooms are cared for in an excellent manner. The prevention of scoliosis involves not only proper seating, but the inculcation of correct habits of standing, carrying books, etc. The author does not think school children liable to injury from overstudy, since so large a part of the time is spent in exercises that require the use of the muscles and the variety of work required relieves it from monotony. The causes of the nervousness so often noticed lie, he thinks, in the great ambition of many of the poor children, in the social distractions of the home life, and, for many of the pupils, in the work exacted by their parents at home.

The amount of time given to physical training is hardly sufficient. Some compensation is made for this lack by athletic clubs which meet after school hours, but of necessity these stimulate and bring into prominence the boys who are least in need of physical training. Athletics for girls is beginning to be considered by the board, but it is necessary to recognize that they are not physiologically

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(1) Med. Record, July 26, 1906.

competent to undertake athletic sports which boys can undergo without injury and they must be restrained from overdoing. Instruction in physiology and hygiene is given, the effects of alcohol and narcotics being taught in accordance with the state law. Gulick enumerates the following, which he regards as the ideals toward which additional progress must be made with reference to the health of school children:

1. There should be individual care, personal inquiry and knowledge of the home life of approximately the lower tenth of every class. This includes those who, for one reason or another, twice fail of promotion. This work is now being done to some extent by the school nurses, under the employ of the board of health. The work should be very greatly extended. Allowing that there are but 500,000 children, of which but 50,000 need this individual attention, and that each school nurse can wisely handle 100 such cases, keeping in personal touch with them and with their families, it would take 500 nurses. These 500 nurses would add to the wealth of the state by saving, to efficient lives, a large fraction of those who now come to adult life with such a degree of impaired vigor or defective development as to be relatively unproductive in an economic sense. Whatever is necessary to be done to prevent incompetence must be done. This can only be accomplished by personal attention of a consecutive character by a person who is qualified from the standpoint of health, in coöperation with a physician.

2. We need to have the consecutive records of all children as to age, height, weight, eye, ear, nose, throat, heart, lungs, and so on. Only in this way can the highest degree of efficiency be secured. Gulick was much interested recently to see in the current press, accounts of medical care of certain child-laborers in India. This care was given most efficiently, not from the standpoint of humanitarian interests, but because it was discovered that the working capacity of the children was a direct function of their health, and that it paid financially to keep them well. It will pay well educationally for us to keep track of the children with reference to these matters of health. It is a relative waste of money to endeavor to train the nervous system of a child that is seriously undernourished, whose

growth is perverted, and who has reflex irritation from defective teeth, eyes, and so on. This work, which is being undertaken in such a vigorous way by the board of health, must be extended and coördinated more perfectly with the board of education.

3. The size of classes should be decreased, so that the nervous strain on teachers shall be lessened; so that there shall be opportunity for a larger degree of individual attention than now obtains; so that teachers may be able to become personally acquainted with the children and to some extent have regard for their health in a way that is not possible in classes of fifty or sixty, where each one must be pressed into certain objective standards.

4. London has a minimum requirement of 30 square feet of playground space for each child in connection with the schools. This is very little. New York should do no less, and yet for a large school—for Public School No. 188, in which there are approximately 5,000 children—it would take 150,000 square feet, or a square of 130 yards on the side. An average city block up-town is 200 feet wide and 600 feet long. It would take a block 50 feet wide and 300 feet long to provide the needed area for this one school.

5. There should be an open-air playground within walking distance of each child. What is walking distance for a child three years old needs to be very near. Places where older boys may play ball need not be so close together.

6. Special classes and schools should be organized for defective children of all kinds. It matters not if these are crippled because of disability of the osseous system, the ocular, the auditory, or from central lack of development. The demands both of humanity and of social economy involve the care of these unfortunates by the public schools.

INDUSTRIAL HYGIENE.

Cotton Cloth. The hygienic conditions involved in the manufacture of cotton cloth are discussed in a review of the health statistics of Blackburn, England, by F. S. Crum.(1) The health statistics of the town have been kept for a number of years in such a way as to afford opportunity for analysis throwing light on the influence of the various parts of the process and of the conditions in the various mills on the health of the operatives. There is a high mortality from consumption and other respiratory diseases and this is partly explained by the amount of dust in some processes and by the dampness of the weaving sheds. The combing and carding and the preliminary cleansing processes produce a considerable amount of dust. Ventilation is imperfect and the desire to exclude outside air and soot renders the managers content with poor conditions of ventilation. The importance of moisture in the weaving process is a reason for keeping the weaving sheds damp and for actually introducing additional moisture. The amount of such moisture that can be introduced has been regulated by law.

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(1) Med. Record., Aug. 11, 1906.

The introduction of electric lighting in some factories has had a good influence by lessening the amount of impurity in the air. In spite of legal regulations, there is much disregard of proper hygienic conditions, but the better class of manufacturers are beginning to perceive that it is for their economic interest to secure as far as possible the good health of their operatives. Some of them have gone beyond the demands of the law in introducing improvements to better the sanitary conditions. Spinners show a high mortality from respiratory diseases, while that of weavers is comparatively low. An explanation of this is found in the fact that some of the women being of mature age retire on being married and are set down as housewives when they die. The mortality tables show that consumption is the principal cause of death among these employés and that there has been a noticeable improvement in the last decade. The author recommends that similar records be kept in the industrial centers of the United States with a view to disclosing the special causes that are operating to injure the health of the working people.

Poison-Workers. L. Lewin[1] calls attention to the fact that legal regulations for the protection of workers against the poisons which they are liable to come in contact with, will affect the minority of workers only, for the majority work in small establishments to which it is impossible or difficult to apply governmental regulations. Much must depend on the workers themselves and it is important that they should be fully warned and well instructed regarding the nature of the poison to which they are exposed and the means which they should use to avoid the danger. Such instruction can be conveniently given by means of circulars which should be prepared in large numbers and freely circulated wherever there are workmen engaged in any occupation that is liable to the chance of poisoning. Lewin publishes a sample of such a circular which defines a poison and poison worker, explains who are liable to poisoning from their occupation, discusses acute and chronic poisoning, the manner and the channels by which poisons enter the body, the general symptoms by which poisoning can be recognized, and the precautions which the worker in poisons should take to prevent the reception of poison himself and its conveyance to others. The suggestions include care not to get any poison on or in the body, directions for washing the face and hands, baths twice weekly or the careful washing the body with soap and sand and daily cleansing of the hands. The avoidance of injurious dust and gases, the use of respirators, sponges and gloves, avoidance of mouth breathing, eating, drinking, smoking, and singing during working hours, chewing, or, if this cannot be given up, the avoidance of putting the chew in the mouth with dirty fingers, avoidance of whisky drinking, and the playing with children.

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[1] (1) Deutsche med. Woch., Oct. 25, 1906.

Lead Poisoning. Kempen in a Münich dissertation, 1905, deals with the statistics of lead poisoning drawn from the 2,000 cases entering the Münich hospital during the years from 1890 to 1904. The preponderance of the male sex is easily explained by the fact that lead poisoning is principally a trade disease and is met with chiefly in trades followed mostly or entirely by men. In consequence of the disastrous consequences of lead poisoning to the female genital organs and to the offspring, women should not be permitted to follow occupations in which there is danger of poisoning by this metal. Among the 2,000 cases, 115 were painters.

An extensive article by E. Tóth[1] deals with the various aspects of this form of intoxication. The principal points are the fact that insoluble compounds of lead produce no poisonous effects, although some insoluble compounds become soluble when subjected to the action of the body liquids. Thus metallic lead, itself insoluble and harmless, may be attacked by the moisture and carbonic acid of the sweat and converted into a soluble compound. The danger from lead poisoning is almost altogether from the lead swallowed and this enters mostly with the food. Eating with dirty hands and handling contaminated objects are responsible for much of the poisoning. The rigid enforcement of rules prohibiting these practices secures almost complete immunity from poisoning in the handling of lead.

From Paint. H. Causse[1] discusses the propriety of the substitution of the oxid of zinc or the sulphate of barium for white lead as a paint, on account of the toxic character of the lead. He calls attention to the fact that this is not a new proposal, similar measures having been proposed as long ago as 1855. The measure does not take into consideration the importance of the industry which the proposed substitution would abolish nor the impossibility of securing a satisfactory substitute for white lead. A good example of the futility of such legislation is the attempted prohibition of the use of arsenic acid for the oxidation of the anilin dyes. Those who advocated this measure were right so far as the injurious action of the arsenic employed, but the result of the prohibition was merely to destroy to a greater or less extent the anilin industry, since no effective substitute for the arsenic could be obtained. The consequence was that the law fell into disuse and arsenic gradually regained its place in the industry while the manufacturers learned to purify their products so that they were no longer injurious. The author calls attention to the extensive use of lead in the arts and to the fact that in many cases no substitute for it can be found. In such cases every precaution should be taken to prevent the injurious action of the metal, but it is not wise to prohibit it altogether.

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(1) Pester med.-chir. Presse, No. 12, et seq., 1907.
(2) Lyon Med., July 21, 1907.

CLIMATOLOGY.

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ASSISTED BY
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FOREWORD.

The current literature on climatology for the past year presents no specially new phase. Reports of new sections of country and new places open to the health seekers are always valuable and much of the world is, as yet, climatically unexplored. Tuberculosis in its manifold relations to climate naturally claims a large share of attention. The continued growth of opinion away from attaching any specific value to climate is marked, both here and abroad. Protest against too high an estimate of the sanatorium cure is very distinct, and a growing demand for extending the treatment, primarily, of course, for the tuberculous poor, over a longer period of time is evident. Public health farms and forest reserves are the means suggested to meet this demand. The urgent necessity for the patients is a well-regulated life, with out-of-door occupation for at least two years after dismissal from the sanatorium as cured. The state appears to be the only possible agent to supply this necessity, and the contest between public needs and political desires is opened at once. Nevertheless, the states are making the experiment, and it rests with the people to keep the management clear from political bias and in the hands of able, well-trained men, who hold the public weal foremost in their minds.

CLIMATOLOGY.

TEACHING CLIMATOLOGY AND CLIMATOTHERAPY.

Methods. Guy Hinsdale[1] gives some very valuable suggestions for teaching climatology and climatotherapy. The difficulty in teaching the subject lies in its largeness. The general principles of meteorology as applied to climate must be made clear and physiologic therapeutics built on that basis. Instruments must be shown and explained, interest awakened in daily weather observations and accurate interpretations made from them. The student thus learns to think for himself and to see the relative value of various climatic data. Again the physiologic effects of heat, cold, humidity, sunlight, altitude, soils and of the configuration of the earth's surface must be made clear. Then follows logically the effect of climate on the chief diseases susceptible to this treatment, tuberculosis, bronchitis, Bright's disease, heart disease, nervous diseases, etc. Lantern slides are a valuable aid, over three hundred different ones illustrating meteorology can be obtained through the Chicago Geographic Society at a very moderate price. Charts showing the facts of air pressure, air circulation, temperature, sunshine, cloud, etc., illustrate the subjects quickly and effectively.

To have a personal knowledge of all the climates recommended is an impossibility. In France yearly medical journeys of two weeks have been instituted, by means of which medical men may visit spas and health stations in various sections of the country. These journeys are inexpensive and decidedly popular. In New York state in two weeks it would be possible to visit Saratoga Springs, Lake George, Saranac Lake, Lake Kushaqua, Ray Brook, in the Adirondacks, Sharon Springs, Richfield Springs

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(1) Medicine, November, 1906.

and the Loomis Sanatorium, at Liberty. Through the South a similar trip could include Virginia Hot Springs, Warm Springs, Healing Springs, Rockbridge Alum Springs, White Sulphur Springs, West Virginia, and other less famous resorts. Demonstrations of the special climatic features and therapeutic methods of each place could be given by qualified medical men. In the United States the only resorts under control of the United States Government are the Hot Springs, Arkansas, the Fort Bayard Sanatorium and Public Health and Marine Hospital Service Sanatorium at Fort Stanton, New Mexico. The author recommends that the subject be presented to students by the "Case System." A brief history, diagnosis, personal features and conditions are given and the student is asked to advise climatic treatment. The main points being noted on the blackboard.

Classification of Health Resorts. The article closes with the following most valuable therapeutic classification of American health resorts:

Pulmonary Tuberculosis. Gravenhurst, Ontario; Lahl Ghur, Ste. Agathe, Quebec; Long Lake, Gabriels, Ray Brook, Saranac Lake, Paul Smith's, Lake Kushaqua, Liberty, N. Y.; Rutland, Sharon, East Bridgewater, Mass.; New Canaan, Conn.; South Scituate, R. I.; Hammonton, Vineland, N. J.; Kane, Glen Summit, Pocono, Mont Alto, White Haven, Pa.; Asheville, Southern Pines, N. C.; Aiken, Camden, S. C.; Thomasville and Summerville, Ga.; Palatka, Enterprise, Fla.; San Antonio, Boerne, El Paso and Western Texas; Santa Fé, Las Cruces, Las Vegas, Hot Springs, Chico Springs, Fort Bayard, Fort Stanton, Silver City and Albuquerque, N. M.; Colorado Springs, Denver, Estes Park, Cañon City, Boulder, Colo; Phœnix, Tucson, Tempe and Prescott, Ariz.; the interior resorts of Southern California, such as Redlands, Riverside, Indio and Idyllwild (near San Jacinto Mt.), Monrovia, Pasadena, Mentone, Esperanza (Altadena), Santa Barbara, San Diego; in summer the Rocky Mountains of Idaho, Montana and British Columbia. In cases complicated with kidney disease and in any advanced stage, high altitudes should be avoided, but hemorrhage is not a countra-indication.

Tubercular Laryngitis.—Interior of Florida and Southern California; Colorado Springs.

Chronic Fibroid Phthisis.—The interior Florida resorts in winter; the sand belt of Georgia, South Carolina and North Carolina. The coast resorts of the southern Atlantic seaboard, including Atlantic City, are suitable for selected cases.

Chronic Catarrh of the Pharynx, Larynx and Nose.—Summer, the Long Island and Massachusetts coast; the interior resorts of Maine, Moosehead Lake, Rangeley Lakes, Poland Springs, the White Mountains of New Hampshire, the Adirondacks, N. Y.; Pocono Mountains, Eagles Mere, Kane, Pa.; the Virginia springs, the mountains of West Virginia and North Carolina; the southern coast of California, San Diego, Coronado, Santa Barbara; Castle Hot Springs, Arizona; Honolulu, Nassau.

Hay Fever.—The highlands of Ontario, comprising the Muskoka Lakes, the Lake of Bays, the Magnotawang district, Penetang, Midland, Honey Harbor, Georgian Bay and Kawartha Lakes, Port Arthur and the neighborhood of Thunder Bay, Lake Superior; Yarmouth, Digby, Nova Scotia; Cape Breton; Charlottetown, Prince Edward Island; St. Andrews, Dalhousie, Campobello, New Brunswick; Bar Harbor, North Haven, Isle au Haut, Katahdin Iron Works, Moosehead Lake and Rangeley Lakes, Maine; Bethlehem, Maplewood, Profile, Twin Mountain, Mount Pleasant, Fabyan's Crawford, Jefferson, Dixville Notch, N. H.; the Isles of Shoals, N. H.; Baker Island, Block Island, Nantucket, Mass.; the higher Adirondack resorts, *e. g.*, Undercliff, Ruisseaumont and Whiteface, Lake Placid; Ampersand, Saranac Lake; Paul Smith's, Blue Mountain Lake, Racquette Lake and Loon Lake; Beach Haven, N. J.; Put-in-Bay, Ohio; Marquette, Sault Ste. Marie, Mackinac, Mich.; Coronado Beach, Catalina Islands, Cal.

Asthma, the Neurotic or Spasmodic Form.—Elevated, sunny regions, *e. g.*, Colorado Springs, Manitou, Glenwood Springs, Colo.; Castle Hot Springs, Ariz.; Hot Springs, Va.; Lake Placid, N. Y.; the White Mountains, N. H.; Kane, Pa.; Lakewood, N. J. The higher elevations are countra-indicated in aged persons.

Chronic Digestive Disorders, Including Constipation.—

The saline mineral springs, including Saratoga and Richfield Springs, N. Y.; Cambridge Springs and Bedford Springs, Pa.; White Sulphur Springs, W. Va.; Napa Soda Springs and Summit Soda Springs, Cal.; Ouray, Springdale Seltzer and Manitou Springs, Colo.; Wilhoit Springs, Oregon.

Catarrhal Disease of the Intestines.—Rockbridge Alum Springs, Va., in summer; Saratoga and Richfield Springs, New York.

Chronic Alcoholism.—French Lick Springs, Ind.; Bedford Springs, Pa. (summer only).

Chronic Malarial Affections.—Newport, Narragansett, R. I.; Cape Cod and the north shore of Massachusetts; the Maine coast and interior resorts; Nova Scotia, Cape Breton, the Thousand Islands of the St. Lawrence; Mackinac, Mich.; the interior Canadian resorts, including Muskoka Lake region, Georgian Bay and Lake Superior; Banff, Alberta, Laggan and Glacier, B. C.; the coast resorts of California.

Chronic Articular Rheumatism.—Hot Springs of Virginia, North Carolina, Arkansas, South Dakota, and Mt. Clemens, Mich.; Indian Mud Springs, Klamath Mud Springs and Hot Mud Springs, Siskyou County, Cal.; Paso Robles, Redlands, Riverside, Arrowhead Hot Springs, San Diego, Coronado, Cal.; Tucson, Castle Hot Springs and Phœnix, Ariz.

Gout and Gouty Conditions.—Dry inland resorts: Hot Springs, Virginia and North Carolina; Mt. Clemens, Mich.; Lakewood, N. J.; Pinehurst, N. C.; Bedford Springs, Pa.; Poland Springs; Maine; Richfield, Sharon, Clifton and Saratoga Springs, N. Y.; Caledonia and St. Leon Springs, Ontario; Banff Hot Springs, Alberta, Canada (summer only).

Heart Diseases.—The coast resorts generally; Glen Springs, N. Y. (summer only); Lake George, the Thousand Islands; Put-in-Bay, Lake Erie; Mackinac, Mich.

Affections of the Liver and Bile Ducts.—Bedford Springs, Pa.; Sharon, Richfield and Clifton Springs, N. Y.; Saratoga, N. Y.; Waukesha, Wis.; Mt. Clemens, Mich.; Calistoga Springs, Cal.; French Lick Springs, Ind.

Bright's Disease.—In the winter the Florida coast resorts; Brunswick and Thomasville, Ga.; Aiken, Camden and Summerville, S. C.; Southern Pines, Pinehurst, Wilmington, N. C.; Hot Springs, Old Point Comfort, Va.; Atlantic City, Cape May, Lakewood, N. J.; Castle Hot Springs, Ariz. In summer, Poland Springs, Maine; Healing Springs, Va.; Long Island resorts, N. Y.; Coronado and San Diego, Cal.; Honolulu at all seasons. Cool, stimulating climates should be avoided.

Diabetes Mellitus.—Palm Beach, Miami, St. Augustine, Ormond and other Florida resorts; Aiken, S. C.; Thomasville, Ga.; Cape May, Atlantic City, N. J.; Lakewood, Hammonton, N. J.; Hot Springs, Virginia Beach and Old Point Comfort, Va.; Coronado, Pasadena, San Diego, Redlands, Santa Barbara, Cal.; Waukesha, Wis.; Clifton Springs, N. Y.; Nassau in winter.

Hysteria; After-treatment.—The coast resorts of the Atlantic and Pacific; in summer the mountains of New Hampshire, New York and Virginia. The tonic climate of Maine is especially suitable. (See under "Neurasthenia.")

Neurasthenia.—The camps of the Adirondack Mountains, N. Y., of Maine and Canada, are especially suitable for men and selected cases among women; Deer Park and Oakland, Md.; Hot Springs, Va.; the quieter resorts of New Jersey, such as Lakewood, Cape May, Ocean City, Spring Lake, Atlantic City, except in summer; the resorts of Long Island, especially Easthampton, Shelter Island, Quogue and Patchogue; Nantucket, Cape Cod, Newport, Marblehead, Manchester-by-the-Sea, Magnolia, Gloucester, Cape Ann; Rye Beach, Portsmouth, N. H.; Kineo, Maine; York Harbor, Kennebunkport, Kennebunk Beach and the islands about Portland, Maine. Mount Desert and Islesboro are also well suited for the summer treatment of neurasthenia. Paso Robles and Del Monte, Cal.; the Canadian Rocky Mountain resorts, Banff Hot Springs, Field, Laggan, Glacier, etc., are suitable for July, August and September. High altitudes should be avoided for prolonged residence.

Neuralgia.—White Sulphur Springs and Capon Springs, W. Va.; Hot Springs, Va.; Saratoga and Clifton Springs, N. Y.; Portland, Ore.; Castle Hot Springs, Ariz.; Arrowhead, Cal.

Anemia and General Debility.—Tonic inland climates, such as the White Mountains of New Hampshire; the Adirondacks, N. Y.; Lake Mohonk, N. Y.; the mountains of Virginia; White Sulphur Springs, W. Va.; Hot Springs Va.; Sharon, Richfield, Crab Orchard and Oak Orchard Springs, N. Y.; Colorado Springs, Glenwood Springs, Manitou, Col.; Paso Robles, New Almaden, Vichy, Congress Spring and Napa Soda Spring, in California; the Maine coast and Long Island coast in summer; Castle Hot Springs, Ariz.; Arrowhead, Cal.

The Feebleness of Age.—In winter the Florida resorts; Thomasville, Ga.; Aiken, Summerville, North Augusta, and Camden, S. C.; Pinehurst, N. C.; Old Point Comfort, Va.; Cape May, Atlantic City, Spring Lake, Long Branch, Hammonton, Lakewood, N. J. In summer the New Jersey coast, Long Island, Cape Cod, Nantucket, Martha's Vineyard, Newport and Narragansett, R. I.; Rye Beach, Portsmouth and New Castle, N. H.; the Maine coast; Rangeley Lakes, White Mountains, Lake George and Lake Champlain, Westport, Elizabethtown, Keene Valley, N. Y.; Saratoga Springs, Clifton Springs, Lake Mohonk, Chautauqua Lake, N. Y.; Put-in-Bay, Ohio; Lake Minnetonka, Minn; Coronado, San Diego, Pasadena, Santa Barbara, Redlands, Riverside, Miramonte, Monterey, Santa Cruz, California.

Skin Diseases.—Hot Springs, Ark.; Hot Springs, Va.; in summer, Warm Springs and Healing Springs, Va.; Richfield Springs, Sharon Springs, N. Y.; Indian Mud Springs, Klamath Mud Springs, Byron Springs, Cal.; Glenwood Springs, Colo.

Syphilis.—Hot Springs, Ark.; Hot Springs, S. D.; Mt. Clemens, Mich.; Banff, Canada.

Chronic Metallic Poisoning.—Richfield Springs, N. Y.; Bedford Springs, Pa.; Glenwood Springs, Colo.; Hot Springs, Va.; Hot Springs, S. D.; Arrowhead, Coronado, Paso Robles, Cal.; Sitka Hot Springs, Alaska; Halcyon Springs, Arrow Lake, B. C.

TUBERCULOSIS.

Climate. Climate as a factor in tuberculosis receives a careful consideration from Sir Hermann Weber.[1] In his

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(1) British Jour. of Tuberculosis, January, 1907.

opinion, based on experience, the advantage is distinctly in favor of mountain climates. The Andes are thought to be especially beneficial; from 7,000 to 10,000 feet above sea level there is very little change in temperature between summer and winter, day and night. It varies from 57° to 65° F. This climate can be but rarely used. Davos, Arosa and Leysin, in the Swiss Alps, are very favorably placed. During the winter they are almost free from dust, being covered with snow, almost windless and very sunny. Somewhat similar are Colorado Springs, Manitou and Denver, in the Rocky Mountains, but they have more wind and dust. The high lands of South Africa have some good claims, but have more wind and sand storms. In Germany, the Giant Mountains, in the Black Forest, possess some of the good qualities of Alpine climates.

There are many favorable inland places of slight elevation in Egypt, Europe, Canada, United States and Asia Minor. The advantages of Egypt are entirely due to the desert; these are great warmth, wide daily range of temperature, low relative humidity, abundant sunshine, small rainfall and aseptic air. Assuan, Luxor, Mena House have the desert climate to some degree, Heluan alone has an almost pure desert climate. Cairo is too unhygienic for a health resort. Occasional dusty high winds are the disadvantage of Egypt, also its great distance and short seasons. Among lowland climates are those of Pau, Arcachon, Gardone Riviera, Arco, Meran, Botzen with Gries; all these have pure air and more or less stillness and can be used in quiescent cases.

The constitution of the patient determines largely the climate to be sought. If strong, mountains with varying temperature are best. For the weak, warm climates, sheltered from wind. If much pyrexia exists cases should be treated near home, avoiding long fatiguing journeys. Weak constitution, chronic progressive disease, pronounced pyrexia require limited exercise and dry warm places. Strong constitution and no pyrexia demand mountain climates, especially if patients are young or in the prime of life. Arrested cases with extensive disease feel best at warm seaside places, as the western Riviera, Bournemouth, England, Isle of Wight, Pau, Arcachon. Patients with albuminuria should avoid high elevation and seek warm dry climates, as Egypt and the western Riviera. Chronic cases with an irritable mucous membrane and tendency to bronchitis or if complicated with emphysema, require fairly warm places of medium humidity, as the Canaries, Madeira and Algiers, or various windless inland localities, as Pau, Arcachon, Gardone, Riviera, the south and southwest coasts of England. Tuberculosis, however, is curable in all climates, but careful sanatorium treatment is necessary to a majority and most helpful to all cases at the beginning. If a cure is possible near home that is preferable to a foreign climate.

Influence of Damp Winds. Observations on the influence of rainy winds on tuberculosis were made by W. Gordon and J. R. Harper[1] in Devonshire during a period of forty-five years. Twenty-three parishes were chosen, so definite in shelter and exposure that the contrasts were sharp. Only female deaths over five years were recorded. Hospital and workhouse deaths, so far as possible, were referred to the parish whence they came, and every effort made to place the figures on a sound basis for comparison. The twenty years from 1885 were separately considered, because diagnosis has been more accurate since then.

The parishes have steep hills, rapid streams with good surface drainage. The northern coast line is mostly precipitous, the western is a low sandy shore, southward is low and level to the tableland of Exmoor Forest. The soil varies, some is very pervious, some very much the reverse. During thirty-four years the relative prevalence of the winds of Barnstaple is as follows: S. W., 20 per cent.; W., 16 per cent.; S. E., 15 per cent.; E., 14 per cent.; S., 12.4 per cent.; N. W., 11.5 per cent,; N. E., 10 per cent.; N., 5 per cent. The annual rainfall for the forty-five years is 38 inches, ranging betwen 25.99 (1892) and 50.14 (1860). Each of the twenty-three parishes has been carefully estimated as to soil, exposure and shelter and they have been arranged serially from the least to the most exposed. A table made from these data adding the deaths from tuberculosis gives these results:

1. Sheltered from S. W., W., and N. W., 8 parishes, death rate per 1,000 was 0.99.

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(1) British Med. Jour., Nov. 3, 1906.

2. Exposed to N. W., only 4 parishes, death rate per 1,000 for the same forty-five years, 1.33.

3. Exposed to W., S. W. and some also to N. W., 11 parishes, death rate per 1,000 was 1.38.

During the last twenty years the following figures resulted: 0.97, 1.00, 2.29, respectively. For the last ten years in the same order; 0.0, 0.33, 1.00. The conclusion drawn by the author is that rainfall by itself does not increase phthisis, but that strong prevalent rainy winds do so to a noticeable degree.

Influence of Aridity. M. A. Rogers[1] believes very strongly in climate in the treatment of tuberculosis. With eleven years' experience with many tuberculous patients, he feels that a stay in an arid climate like Arizona is of especial value for those convalescing from acute disease, at which time they are especially liable to contract tuberculosis. Arizona is also especially favorable to the growth and development of children. But it must be remembered that the tuberculous in an arid climate need medical care, rest and nursing as much as at home. Sanatorium treatment is most favorable. The three great advantages of the arid climate are: 1, The dry, invigorating, sterile quality of the air; 2, open-air treatment can be carried on the entire winter without discomfort; 3, the almost continuous bright sunshine is curative and conducive to cheerfulness and hopefulness. All forms of tuberculous throat affections, the author states, are unsuitable for this form of climatic treatment.

The Influence of Altitude. Dr. Morin[2] describes the methods and results of the treatment of tuberculosis by altitude as used at Leysin. There are now eleven physicians and seven sanatoria there. Of these the Climatic Association of Leysin owns four, two are state charitable institutions, the People's and Children's, the latter especially for surgical cases; the remaining two are owned by physicians. Selecting 385 pulmonary cases only, the average time of residence was four and one-half months. They were divided as follows into the three stages: First stage, 33 per cent.; second stage, 42 per cent.; third stage, 25 per cent. The results are shown in the following table:

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(1) Charities and the Commons, Sept. 1, 1906.
(2) Therap. Monats. Berlin, xix, No. 1.

TABLE OF CASES AND RESULTS.

Stage	Cured.		Improved only.		Total improvement.		Unimproved or worse.		Dead.		Total No.
	No.	%	No.	%	No.	%	No.	%	No.	%	cases.
I	82	65.1	41	32.5	123	97.6	..	..	3	2.4	126
II	43	26.5	103	63.6	146	90.1	12	8.0	4	2.5	162
III	..	..	40	41.2	40	41.2	41	42.2	16	16.5	97

Turban's classification was used in all cases, so that the results in different sanatoria are comparable. In the author's opinion fully 92 per cent. of the early cases may be assured of cure if there are time and means for them to remain at a sanatorium long enough to insure it. Many of the cases classified as improved would ultimately be cured if they remained under favorable conditions. It is noticeable that the third stage cases show a remarkably high percentage (41.2) of improvement.

For anything like success in treating these cases the isolation and complete control of the lives of the patients that the sanatorium allows is essential. What he calls the remarkable stimulation of the system, which occurs at the altitude of Leysin, is caused, he says, by the purity, rarefaction and dryness of the air, together with the abundance of sun's rays that penetrate it. Of these the ultraviolet are especially abundant, as photography proves. It is these that have a peculiar value, especially for local use, as in a diseased joint or gland, and they are also of value in infection of the larynx and lungs. These rays, he claims, are largely absorbed by the moisture of the lower atmosphere, hence the valleys and lowlands lack this valuable aid. The author also lays emphasis on the tuberculin treatment. The tuberculin as prepared by Béraneck is used at Leysin. It has especial value, since it contains all the toxins from the bodies of the bacteria (Koch's new tuberculin—T.R.) plus those derived from the bouillon culture, excepting those developing outside the bacilli (peptones, etc.). It is desirable to select early cases, without secondary infection and with a fair amount of resistance, in order to get the best results. It is a most valuable aid in treating all forms of the disease, in surgical cases being especially efficient used by local injection. The author agrees with

Professor Béraneck in saying that tuberculin is essentially a sanatorium treatment. These altitude resorts, the author believes, should be used the year through, not only during the winter. [It would be of much value to know whether the addition of tuberculin to the previous treatment at Leysin has changed the percentages of cures. The author does not state this fact. It is to be regretted, too, that he does not give data for his belief in the so-called stimulation of the atmosphere and in the abundant ultra-violet rays of light and their special effect on the bodies of the sick. He gives his opinion freely enough.—Ed.]

Selection of Climate. Maxims for the selection of climate in pulmonary, laryngeal and bone tuberculosis are given by S. A. Knopf.[1]

1. A change of climate, though slight, is good except in the late third-stage cases.
2. The native climate of the tuberculosis patient is a factor in making climatic change. Colorado, the Adirondacks or similar places are better for those born in cold regions. Southern California, Arizona, New Mexico, etc., are better for those born in warm regions. But the patient's good feelings must largely guide.
3. Idiosyncrasies to climate exist and can only be found out by experience.
4. The relative values of different climates to the same patient can only be told if the same régime is held to.
5. Great altitude (3,000 feet, etc.), cold or cool or hot and dry, dust-free regions are of most value to pulmonary cases without complications of weak heart, emphysema, constant fever, extreme nervousness. Early hemorrhage *per se* need not determine climate.
6. Early stake laryngeal cases with little lung involvement are suited best by moderate elevation (1,500-3,000 feet), warm and moist. Most catarrhal cases are better in very dry, hot places, if not too dusty.
7. Heart complications, slight bronchitis and mixed infections do well at the sea coast for the greater part of the year.
8. The following factor also enters into choice of locality: Must the patient return home when cured? Re-

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(1) N. Y. Med. Jour., July 28, 1906.

lapses on returning home occur more frequently when extreme changes are made. [Is the relapse due to climate or due to the probable re-assumption of the conditions of life that primarily caused the infection?—Ed.]

9. Advanced, hopeless cases should be left near home.

The Influence of Sanatoria. Some further statistics are given by J. H. Elliott[1] on the mortality from tuberculosis in the neighborhood of sanatoria. He compares the mortality figures from this disease for two decades, one before and one after the founding of the Muskoka Cottage Sanatorium at Gravenhurst. The statistics include pulmonary, meningeal and surgical tuberculosis. Any deaths of those infected before coming to Gravenhurst are not included. The average population for each decade is used for comparison. For 1885-1895 this was 1,848; death rate, 11.6 per 10,000. For 1895-1905 population was 2,482; death rate 9.7 per 10,000. Up to Dec. 31, 1905, 1,700 patients had been treated in the sanatoria at Gravenhurst. Many of these lived in the town under careful supervision, others had none. The Muskoka Sanatorium is two miles, the Muskoka Free Hospital one and one-quarter miles from the town. These figures the author considers to support those already made by Roempler and Brehmer for Goebersdorf during a period of 100 years; by Dettweiler in Falkenstein for 18 years; by the trustees of the Rutland Sanatorium for 18 years before and 6 years after opening the institution; at Saranac similar results have been obtained.

The author concludes that in any town or village near which a sanatorium has been built for treating tuberculosis the death rate for this disease has lessened among the native inhabitants. [In the United States the deaths from consumption and general tuberculosis in 1890 were 12.14 per cent. of all deaths. In 1900 the figures had fallen to 10.68 per cent., or a decrease of 1.46 per cent. of all deaths. The author's figures show a reduction of 1.9 per cent during the second decade as compared with the first one. This is too narrow a margin on which to draw safe conclusions, and it is manifestly unfair to attribute the reduction to any local cause.—Ed.] The towns near by have grown in population and business owing to the

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(1) Trans. Am. Climat. Assoc., Vol. 22, 1906.

presence of these institutions. There has certainly been no damage to the region through them. [This shows a wholesome sanity much to be commended to those suffering from a foolish terror of this disease.—Ed.]

Results of Sanatorium Treatment. The results of the state sanatorium at Ray Brook, N. Y. are summarized in an interesting manner by M. P. Burnham.[1] Following the act of the legislature establishing a sanatorium for incipient tuberculosis, Ray Brook, in the Adirondacks, was chosen. Tent camps were built and used in the summer of 1904, and when the main buildings were completed, in November, 1904, 100 patients were being treated. There is a main administration building, containing offices, general dining room for patients and kitchens, engine rooms, etc., in the rear. There are two pavilions for men and women connected by large solaria with the main building. The rooms are suitable for from one to three patients. The buildings face south and have protected verandas on each floor. Incipiency, residence of one year in the state and inability to pay are the requirements for admission. Pay patients, however, are admitted if there is room after all charity cases are provided for. The charge is regulated by the board of trustees; at present it is $7 per week. Application is made on an official form, stating the history of the cases and the inability to pay. This is signed by the commissioner of charities or the overseer of the poor in the town where the patient lives. The town or county then assumes the payment of $5 per week for the case. Examination is made by one of the state examiners (there are two to each second class and four to each first class city of New York). The superintendent has the final acceptance or rejection of the case. Pay patients apply to the superintendent direct and receive the same official examination.

In the report of cases they are classified according to the method adopted by the National Society for Study and Prevention of Tuberculosis in April, 1905.

From Jan. 1, 1905, to Dec. 31, 1905, 293 persons were treated. Of these 165 were reported on.

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(1) N. Y. Med. Jour., Feb. 10, 1907.

Discharged, apparently recovered, 72; 44 per cent.
Discharged, arrested, 64; 38 per cent.
Discharged, improved, 21; 13 per cent.
Discharged, unimproved, 8; 5 per cent.
Died, 0.

The results are put in a comparative table, as follows:

Condition on admission.	Patients admitted.		Apparently recovered.		Disease arrested.		Improved.		Unimproved.	
	No.	%	No.	%	No.	%	No.	%	No.	%
Incipient	87	53	63	72	21	24	2	3	1	1
Moderately advanced	65	39	9	14	40	61	11	17	5	8
Advanced	13	8	0	0	8	23	8	62	2	15

The methods of treatment are as follows: The patient on admission goes to the infirmary, where he is under very careful observation for the first week. A full record is made covering family history, previous illnesses and present condition. Especial attention is paid to the size and mobility of the chest, the physical findings, sputum examination, which includes numbers, form, grouping, size, etc., of bacilli and amount of sputum, urinalysis and blood examination (in anemic cases). During this first week the patient is kept in a reclining chair on the open veranda, with no exercise and on a regular diet. Temperature, respiration and pulse are recorded. If at the end of the week there has been no fever, short walks, taken slowly, are allowed, and gradually increased. For a rise of temperature of one degree or less, if persistent, the patient is put to bed and kept absolutely at rest until the temperature returns to normal and remains there for two weeks, when exercise is again allowed under supervision. The days begin at 7 a. m., end at 9:15 p. m., rests of three and three-quarters hours morning and afternoon and two and one-half in the evening are taken on the verandas in reclining chairs; exercise, if allowed, is taken morning and afternoon. Breathing exercises are taken three times a day under the supervision of the physician (only by those with slight and absolutely quiescent disease). Milk and eggs are served at 10 a. m. and 3 p. m. All windows are open at night.

The greatest care is used to prevent infection from sputum; cups are carried at all times and burned each morning. The treatment is almost without drugs; for fever and rapid pulse *rest* is the only remedy, for hemorrhage the usual treatment, morphin, absolute rest, active cathartics and strapping chest, if the point of the lesion is determined. Much emphasis is laid by the author on the early signs of infection. Since the time the poor may stay in a sanatorium is so short and the return to the same bad conditions so inevitable, any time saved by early diagnosis is of inestimable value.

In any suspicious case a single negative examination of sputum is absolutely valueless. To make any estimate the early morning sputum for from 10 to 15 consecutive days is examined before a negative report is given. Tuberculin is used in doubtful cases. In the physical examination râles are often not heard unless the patient coughs, when they appear. The mucus click is one of the earliest signs; this is due to increased mucus secretion in the smaller bronchioles; the râles appear later. If there is doubt, it is better to err in favor of tuberculosis, not in favor of the patient, as is usually done. No harm is done by sending a patient for treatment, but much by neglecting to do so.

The treatment of the patients after dismissal from the sanatorium is really the key to the problem of sanatorium treatment. With the well-to-do there is no difficulty; with the poor much. This accounts for many disappointing results in supposed cures. For two years afterward the patient should be kept in favorable surroundings and follow a suitable routine before the term *cure* is justified. This problem of housing, providing work and caring for patients discharged from sanatoria is the largest health problem before the country today and one which must be solved before the treatment of the consumptive poor by the state will be unqualifiedly a success.

Value of Sanatoria. C. L. Wheaton[1] emphasizes anew the value of the sanatorium in the crusade against tuberculosis. The sanatorium and the sanatorium idea has freed Havana from filth and disease; applied to the infected Panama Canal zone it will reveal the possibilities of modern medicine; it is essential to the solution of the tuberculosis problem. In addition to the central institution, there should be model, free dispensaries in all cities, especially in

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(1) Jour. Am. Med. Assoc., Jan. 19, 1907.

crowded districts, open-air day camps, information bureaus, lecture bureaus, experimental stations coöperating with the sanatorium under state supervision. By this means the well, especially the poor, can be taught the art of living properly and the sick can be segregated and supervised.

The sanatorium is most important in relation to the economic course of consumption in wage earners. As his earning capacity ceases and he becomes dependent the citizen ceases to be useful to the state. In 1905 there were 10,000 consumptives in Maryland. Of these 8,000 had ceased to be economic factors and must ultimately become state charges. In Illinois, in 1904, there were 8,000 deaths from tuberculosis. In the state sanatorium of Massachusetts 68 per cent. of the incipient cases were arrested in 1899, 73 per cent. in 1900, 73 per cent. in 1901, 72 per cent. in 1902, 73 per cent. in 1903 and 76 per cent. in 1904. Boston was the first city in this country to establish a day camp for its tuberculous poor; it has done much good. For its first year's work with 207 patients (half were incipient cases) the New York state hospital reports no deaths; of 105 discharged patients 52 were apparently cured, 26 arrested, 16 improved, 11 unimproved. The Agnes Memorial Sanatorium, in Denver, reports 64.7 per cent. of its incipient cases cured, 17.65 arrested, 17.65 improved. In none did the disease progress and none died.

New Jersey is building its state sanatorium, and now there is scarcely a state that has not had more or less agitation on the subject, and many have been successful in their efforts. The public services, the army and navy and the Public Health and Marine Hospital are active in the crusade. Fort Bayard reports for 1904, 644 sick soldiers. Of the 643 reported on 340 were improved, 52.88 per cent.; in 22 the disease was arrested, 3.42 per cent.; unimproved, 208, or 32.34 per cent.; dead, 73, or 11.35 per cent. In Germany the present rapid decline of the disease will, he thinks, result in its extermination in forty years or less. In Prussia the death rate has fallen from 31 per 10,000 in 1886 to 21 per 10,000 in 1900. This is largely due to the provision of sanatoria for the working classes and to their systematic early resort to these institutions. In New York

City the reduction in 15 years has been more than 30 per cent.

A Use for Forest Reserves. A recent address by S. G. Dixon[1] contains a most suggestive record of a use to which the state of Pennsylvania is putting her forest reserves. Two widely separated colonies for tuberculous patients are to be established by the state in forest reservations, consisting of inexpensive small frame cottages and an infirmary for the more advanced cases, whereby they may have shelter and comfort and cease to be centers of contagion. After recovery male patients are to be offered forestry work, and their board and clothing until their cure is proved. Efforts will then be made to get permanent country work. Any employed in objectionable professions, as stone cutting, etc., will be urged to change their work. Separate from this enterprise, it is planned to establish in each county of the state a dispensary for tuberculosis under the direct supervision of the health department. Here patients may come who can not leave home for a prolonged stay at the sanatorium and get advice in matters of diet, medication and home open-air treatment. They are to be taught care for others as of prime importance, and the continuance of the state aid and advice depends on compliance with these instructions. The legislature has just appropriated $1,000,000 for these purposes and has granted the use of two tracts within the state forestry reservations. The advances made in other states in this promising field of state medicine will be watched with the closest attention and every suggestion which promises to make such enterprises more successful and thus aid in lifting this shadow which darkens so many homes, will be taken advantage of. As such plans are being carried out in so many states it behooves the members of the medical profession to do all in their power to help solve the problem in their individual states.

Managing the Problem. J. H. Musser[2] makes a strong plea for sanity, candor and humanity in the management of tuberculosis. He feels that the public has been dangerously educated as to the curability of tuberculosis; that it has no real power of discrimination as to degree of infec-

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(1) Jour. Am. Med. Assoc., June 8, 1907.
(2) Jour. Am. Med. Assoc., Dec. 29, 1906.

tion and variation in resistance of the individual. Hence it is safer to hold that tuberculosis is sometimes curable. The best sanatorium (Saranac) in the country, in 17 years, with the best means at command, reports 66 per cent. of incipient cases continuing well, 28.6 per cent. of advanced cases are well and 2.5 per cent. of far advanced cases are cured. Under ordinary conditions, if they do the right thing, chances are about even. Sanatorium treatment is placed on too high a pedestal by its ardent supporters. Especially is this true in England, where the public believes six months' residence is enough to cure tuberculosis. The sanatorium is only part of the cure, and a part that some can never employ. The great danger in state sanatoria is that political management will creep in and vitiate the results. Flick, Dixon and Penrose have seen the danger and struck at it boldly. As a unit the profession should demand that the treatment agreed on by the great experts be carried out in all state work; no one without previous experience should be allowed to take charge of a large sanatorium, for the selection of suitable cases demands the greatest diagnostic skill. There should be the greatest candor in treating cases, but no one should be cleared or condemned on one examination if conditions are not positive. When the facts are known tell the patient at once the nature of his illness, with due regard to his temperament. Notification of cases is just and should be universal. Treatment should be along sanatorium lines. The best results come only by these means. This calls for rest, fresh air, abundance of food and unstinted sunlight. After arrest of the disease gradual exercise to bring the patients up to a normal physical life must be evolved. Hence there should be no return to former duties and bad environment. An appropriate climate is of great value and the matter should be carefully studied by the profession. No one climate is good for all cases, and some may do harm, not good, unless the cases are studied thoroughly before climatic advice is given.

British Sanatoria. *King Edward VII Sanatorium,* Midhurst, is described by N. D. Bordswell.[1] It stands in 151 acres of finely wooded country overlooking the South

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(1) British Jour. of Tuberculosis.

Downs, about 495 feet above sea level. The grounds, with terraced gardens and lawns, afford both recreation and light work for the patients. The buildings consist of the patients' block, the administrative block, the pathologic block, the laundry and engine house block, the garage and stable, the chapel. The patients' block faces south and is 700 feet long, three stories high and contains two large recreation rooms, two hydropathic rooms, two writing rooms, one hundred patients' bedrooms (fifty for men, fifty for women), with six nurses' kitchens, linen rooms, etc. The patients' bedrooms are 13.5 by 11.5 by 11 feet; large windows open on to a balcony 8 feet wide. The dining room is lined with Doulton Carrara ware, with a stone floor, heated from below. The kitchen has the most improved fiittings, and there are hot-water plates and boilers for tea and coffee. Pantries for the patients and staff are separate, the former having a sterilizer. The medical rooms are a waiting room, a consulting room, a dispensary, operating, electric and dark room. The administrative block consists of the board room, the quarters of the medical officers, matron, nurses and domestics.

In the pathologic block are a postmortem room and three well-appointed pathologic and research rooms. The chapel consists of two naves at right angles to each other, the chancel at the junction. The southerly aspect of each have is an open cloister; the floor of the chapel is stone, heated from below. Admission to the sanatorium is limited to early-stage cases. Patients are divided into two classes, (A) those of small means, (B) those well to do; eighty-six of the former and fourteen of the latter can be admitted.

Jane Walker[2] gives data about the *East Anglican Sanatorium*, Mayland, Suffolk, England. Built for carrying out the open-air treatment, it faces south and southeast and is on dry, sandy soil. The estate has 100 acres, with flower gardens, tennis courts, croquet lawns and small golf links. Shelters are arranged for the patients to sit and lie in during the day. The sanatorium has its own dairy farm, electric lighting plant, large kitchen and laundry. Patients suffering from all forms of tuberculosis are admitted, also convalescents from other illnesses or surgical operations. There are accommodations for 35 men and

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(1) British Jour. of Tuberculosis.

women patients, a resident medical officer, a matron and a staff of nurses.

The *Brompton Hospital Sanatorium* is described by Frederick Wood.[1] It stands on the Cobham Ridges, Surrey, 400 feet above sea level, thirty miles from London, two miles from Frimley station and three miles from Camberley. The pine woods of the Heatherside estate surround the grounds, except to the south and the soil is sand and gravel. The building is of stellate form, two storied, except the center part, which is three. One hundred patients can be accommodated. The four radial pavilions contain the majority of the wards. They face S., S. S. W. and S. S. E. No part is shaded by another and there is 300 cubic feet space to each patient. The windows are open day and night, with protection from weather and glare. The patients can be wheeled on to the terrace from the lower story and there are open balconies at the end of each pavilion. Two detached sanitary towers, connected by gangways to the central building, contain the bathrooms, lavatories, etc. The two large dining rooms and a large recreation room make a separate group, and behind these are the offices, kitchens and nurses' home. At some distance away is the machinery block, with engine house, laundry, lighting plant, mortuary and laboratory. The buildings are lighted by electricity, heated with hot water, well drained and with good water supply. Patients are admitted from the wards of Brompton only, and great care is taken to select only those cases likely to get the greatest benefit from a stay of several months. Under careful supervision patients are accustomed to graded exercises, the lowest is simple walking, the highest digging trenches in unbroken ground. Total arrest of the disease is considered to exist if (1) all bacilli are gone from sputum, (2) entire absence of any physical signs of active mischief and (3) an ability to work at the highest grade of exercise for two or three weeks without rise of temperature or loss of weight.

Value of Southwest Africa. The settlement of southwest Africa by the tuberculous is fully discussed by P. Kuhn.[2] There are two peculiar conditions in this region, the coast is bathed by exceptionally cool water and the land rises rapidly to considerable heights, elevations of 3,000 and more feet being found about 60 miles inland. The rivers flowing from east to west have a heavy fall and cut deep valleys near the coast. It is a high plateau, with little water, very cool nights and marked cold and warm seasons. In the north the yearly rainfall averages from 20 to 24 inches; in Hereroland, 16 inches; in Namaland, from 8 to 12 inches. The rainy season is from the end of November to May, the summer. In the winter from May to November it is dry. The rainfall lessens from north to south and inland to the coast. Rain without thunder is rare; so rare that the natives use the same word for both things. The first half of the dry season, from the Middle of May to the last of August is very pleasant, the days average eleven hours, the nights are cold, often with frost in the lowlands and high elevations in the interior. The days are warm. From August frost ceases, the days lengthen, the air is dry, sand storms occur, the hot north and east winds begin and the roads become very dusty. Greater or less seasonal rainfall and variation in distance from the coast modify all these conditions. Even in the hot season the nights are almost uniformly cool and bracing, the dry air causes rapid evaporation and the heat is very bearable. At the coast, though far damper, the hot weather is not nearly as trying as it often is in Berlin. [The similarity between these geographic and climatic conditions on the African West Coast from 20 to 30 degrees south latitude to those of Southern California on the American West Coast from 32 to 35 degrees north latitude is quite striking. The rainy season is in the same months of the year, but during the summer instead of the winter.—Ed.]

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(1) British Jour. of Tuberculosis.
(2) Berl. klin. Woch., Feb. 11, 1907.

The coast itself is desolate, sand dunes and rocks for from 35 to 40 miles inland. The average yearly temperature is about 61° F. During the wet season there is a great deal of cloud, often without rain. This prevents radiation and makes the daily temperature range slight. In winter the clouds disappear, the nights are clear and the heat in the day often greater than in the summer. There is far less difference between summer and winter at the coast than inland. There the climate is that of a high desert plateau similar to Colorado, very dry, clear, windy, with high electric content in the air. The one native disease to combat is malaria. Its distribution follows closely the rainfall, it increases from south to north, from west to east. The coast, the arid Namib, the desert girdle, which surrounds the coast, are free. Malaria begins about the level of Otyimbingwe. The especial malarial district is the north, the districts of Outjo, Otavi and Grootfontein. Even here contagion is only possible in the rainy season, since the mosquitoes are killed by frost. All this area the author believes can be made malaria free. Protection of the water is the key. This region is the most favorable possible to attempt the fight after Ross' methods. There is a distinct rainy season, frost comes regularly throughout the whole district and kills the mosquitoes. The preventive use of quinin added to thorough water protection should be successful. The disease can and must be stamped out.

[The author's statement that frost kills mosquitoes is contrary to the statements of Dr. L. O. Howard, chief entomologist of the United States government, and others, who show that not only do adults and amigos winter over, but that larvæ may be frozen in ice and yet survive.—ED.]

In regard to tuberculosis the evidence goes to show that Southwest Africa is most favorable. A sanatorium should be built in the colony to prove the point, this should be closely associated with the home sanatorium movement. The tuberculosis settlers may safely either remain permanently after cure or return home. It is essential that the enterprise be closely associated with the sanatorium movement in Germany and to this end the question must be taken up by the sanatorium physicians and managers. [The idea of forming a tuberculosis colony, to which the victims of the disease in the home country should be sent is rather novel. Being accustomed to a large amount of paternal control it is possible that the German people would make good subjects for such a settlement, the success of the experiment would be doubtful unless complete, almost military control, were exercised by those in authority.—ED.]

HEALTH RESORTS.

Davos, Switzerland. This place is well described by Egbert C. Morland.(1) It is an upland valley in the extreme

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(1) British Jour. of Tuberculosis.

Eastern Switzerland, 16 miles long, running from N. N. E. to S. S. W., it is from 4,200 to 5,400 feet high. Pines and larches cover the sides down to 1,000 or 1,500 feet, below this the deciduous trees appear. The temperature is low, 37° F. is the annual mean, snow lies there from mid-November to mid-April, summer nights are cool. The sun's rays are intense and long-lasting, the summer sun losing less than half its heat in midwinter. January has 55 per cent. of possible sunshine. The air is intensely dry. The mean total rain and snowfall is equivalent to 35.5 inches of water. There is almost complete absence of dust, cloud, mist and wind.

Those with feeble circulation, extensive emphysema or renal disease are unlikely to benefit, laryngeal irritability may be unfavorably affected by the dry cold. Severe pyrexia is a contraindication to the journey, not to the climate. Davos is less than twenty-four hours by rail from London. Platz, Dorf or Clavadel have accommodations in winter at Sanatoria, hotels, boarding houses and villas. The Queen Alexandria Sanatorium for persons of small means is in construction.

St. Moritz, Engadine. Arnold C. Klebs[1] discusses the value of St. Moritz, Engadine, for treatment of diseases. It is unique among European spas because of its high alpine climate (6,000 feet) modified by a southern aspect on a mountain range and having chalybeate and carbonic springs. It is easily reached from Paris in less than three-quarters of a day. It is not a place for the hopeless invalids, and their absence adds to the pleasure of the place. The cost of living is as high as anywhere in Europe in the excellent hotels, but very good simple accommodations may be found nearby at Pontresina, Maloya, Camfer Silvaplana, Sils, etc. The beauty of the region with its valley meadows, upland pine forest and rocky snow-covered peaks, rushing river and clear lakes enhances its value. The air has great dryness, coolness in summer, warmth in winter, through the abundant sunshine and absence of wind. It is free from germs and dust, has lessened pressure and greater radioactivity. The powerful influence of insolation on wounds and surgical tuberculosis has been demon-

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(1) Trans. Am. Climat. Assoc., Vol. 22, 1906.

strated by Dr. Bernhard in his solarium hospital at Samaden. The springs at St. Moritz are three, Old Spring, Chiefly used for bathing, the Funtana Surpunt for bathing and drinking, and the Paracelus for internal use only. All are carbonic acid and iron. There are facilities to carry out the Nauheim régime and all modern hydrotherapeutic appliances. The Oertel régime of graduated exercise or the terrain cure for heart disease, etc., can be admirably applied. The varying surface of the ground, protection from wind and the beauty of scenery prevent any monotony. The excellent well-kept paths varying from miles on dead level to a gentle incline and up to a steep grade are not yet fully marked, but soon will be. From experience the writer finds that the marking of the distances covered by an average person in a one-fourth and one-half hour is essential. This has been done about St. Moritz and the author can consequently regulate exercise very closely for different patients. It is essential to all patients to get a suitable rhythm between the number of steps and the respiration. An experienced mountaineer can take three or four steps to each respiration, but most patients can manage one step to an inspiration or expiration; divided expiration is useful on the steeper paths. The chief point is to measure the steps by the length of inspiration and expiration. The purpose of exercise is to strengthen cardiac muscle, the patient must climb until the heart beats become perceptible, then stand until they disappear, when he repeats the process. Of late years St. Moritz has become an important Alpine winter resort, the dry air, absence of winds and dust, the deep snow and abundant sunshine combine together many very desirable winter qualities. In time all the other advantages will be utilized in winter as well as the climate. There is abundant opportunity for amusement in winter sports and free out-of-door life.

Aix-les-Bains. Aix-les-Bains[1] is situated on the Canton of Savoy in the valley of Aix. The climate is equable, in summer the temperature rarely reaching 82° F. The mornings and evenings are cool and there is protection from violent winds. The thermal springs, the "Sulphur" and the "Alum," yield over a million gallons of water

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(1) Editorial notes British Med. Jour., April 13, 1907.

daily. They are very similar in constitution; the water is clear, with a sulphurous smell, temperature of 113° F. to 115° F. Chemically their composition is as follows:

COMPOSITION OF "SULPHUR" AND "ALUM" SPRINGS.

	—Milligrams or c.c. per Liter—	
	Sulphur Spring.	Alum Spring.
Sulphuretted hydrogen	3.75	3.74
Hyposulphites	3.84	3.60
Carbon dioxid	47.15 c.c.	44.58 c.c.
Nitrogen	13.03 c.c.	12.50 c.c.
Calcium carbonate	0.1894	0.1623
Magnesium carbonate	0.0105	0.0176
Lime sulphate	0.0928	0.0810
Magnesium sulphate	0.0735	0.0493
Sodium sulphate	0.0327	0.0545
Sodium chlorid	0.0300	0.0274

With a trace of lithium and a minute quantity of silicon.

The "Alum" spring does not contain a trace of alum. There is also a cool spring (51° F.) yielding an equal amount of water daily. This is used to cool the hot water. Rheumatism in all its varied chronic forms, arthritis deformans in early stages, chronic articular gout (by external treatment) are all benefited. In pseudoankylosis and muscular atrophy some wonderful cures are claimed. This treatment is also good in the prophylaxis of all arthritic diseases, especially in children with a tendency to obesity. Tuberculosis of joints, bones and viscera contraindicate the Aix cure, also uncompensated heart lesions and kidney diseases with renal insufficiency. Those with a great tendency to apoplexy or with biliary calculi are not advised to visit Aix. Massage is the great feature of the Aix treatment, especially the double-massage, that is massage of the body, local and general, under the hot sulphur water. Douche pipes giving various pressures and temperatures for local and general use are arranged in rooms. The single treatment lasts but from 10 to 20 minutes, if continued longer the patient suffers an attack of fatigue and indigestion called at Aix "thermal fever." Rooms are arranged so that local douches may be applied, the patient puts the part to be rubbed (arm or leg) through rubber covered holes, the operator on the other side massages and sprays the part without necessitating complete undressing.

Many other features are included, steam vapor, inhalation, swimming baths, etc. The cure lasts from 25 to 30 days, having from 18 to 20 treatments. Diet is regulated and care is taken not to increase nutrition too much, as the appetite is stimulated by the mountain air. During the treatment by douche-massage the total urinary solids increase, especially uric acid, and urinary water decreases, arterial tension lowers and heart symptoms are relieved. Drinking the water is of far less importance than its external use.

The cold alkaline-iodurated sulphur springs of Marlioz have a temperature of 57° F., and the following analysis:

CHIEF MINERAL CONSTITUENTS OF THE MARLIOZ SPRING.

	Per liter.	
Calcium carbonate	0.1912	milligrams
Sodium hydrosulphid	0.0295	"
Sodium sulphate	0.2631	"
Calcium sulphate	0.0605	"
Magnesium chlorid	0.0640	"

With minute quantities of sodium iodid and silicon and a trace of bromin.

There are two rooms for hot and cold spray applications and two large rooms for dry inhalation of the water products, a gargling room, a bath house with warm and cold baths and douche rooms. The treatment is chiefly used for chronic forms of laryngeal and bronchial catarrh, granular pharyngitis, adenoid growths, hypertrophy of tonsils, and ear and eye diseases, for lymphatic children with large glands and for hereditary syphilis. [We fail to see how such treatment could offer any radical cure for adenoid growths or tonsilar hypertrophy.—ED.]

Cuba as a Winter Resort. Cuba is advocated by Lind.[1] The following advantages can be found there: A higher and more even temperature than that of the southern states, 65° to 85° F. is the range, yet the heat is never oppressive; a fresh breeze sweeps the island; owing to vegetation no sand or dust storms ever occur; the winter is the dry season, with almost constant clear skies; insects are not troublesome, mosquitoes not being noticed and fleas less obnoxious than in the South. Communication is as good and cheap as in California, Arizona, New Mexico or Florida. A railroad in Florida is being built to Key West, which will bring Havana within four hours by sea. Altitude from 500 to 1,000 feet can easily be obtained, if desired, as well as sea level. The author has had phthisical

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(1) Jour. Minn. State Med. Assoc., April, 1907.

patients, who fared as well in Cuba as elsewhere; catarrh, bronchial and chronic rheumatic ailments generally improve rapidly and the Cuban winter is well suited to old people.

Hawaii. E. S. Goodhue[1] presents data of the climate of Hawaii. Statistics give a more than usually correct impression of the climate, though almost any climatic condition can be found by changing elevation and location. The mean average temperature is 75° F., extreme summer range 70° to 89° F., winter range 54° to 76° F. The trade winds prevail nearly all the year round in most places subject to them at all. In 1891 in Honolulu there were 249 trade wind days, 85 variable and 31 calm. The occasional Kona or south winds are an annoyance, but are infrequent and may skip a whole year. The temperature changes they bring are conducive to colds and malaria. For September, 1905, the mean temperature in Hawaii, at an average elevation of 1,078 feet, was 72.6° F. The other islands gave the following: Maui (at 815 feet), 73.4° F.; Oahu (at 350 feet), 76.3° F.; Kauai (161 feet), 77.3° F.; Molokai (435 feet), 76.4° F.; the mean temperature of the entire group, at the average elevation of 639 feet, was 74.8° F.; the highest monthly mean, 80.4° F.; lowest monthly mean, 54.2° F.; absolute range, entire group, 57.0° F. The average annual precipitation for the entire group was 8.31 inches; Honoman Valley having 33 inches, and other places less than one-half an inch. Different pressure, temperature and rainfall, can be obtained by going up or down the mountains.

The author's district of Kona was as follows: Temperature, maximum, 78.6° F.; minimum, 64.2° F.; rainfall, 6.35 inches; elevation, 1,350 feet. While, of course, there are seasons to be found that are wet and foggy when they should be dry and fine, on the whole the two districts of Kona have an ideal climate. At 900 feet the rain generally falls at night. But little barometric change occurs during the year; it is never hot, there are no fogs, no winds to speak of, no dust, no mud. By no means is it immune to disease, people die of tuberculosis and some get worse, but to some cases it is eminently suited. Good sanatoria

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(1) So. Calif. Pract., August, 1906.

will make a great difference in the treatment of this disease, but now unfortunately such aids are lacking.

The Irish Riviera. Charles E. Nammack[1] writes enthusiastically of the Irish Riviera as a place for rest or for convalescing from acute illness, especially if time for the longer Mediterranean trip is not available. A trip of four weeks can be made to the southern and western coast, lakes and mountains, which gives great benefit and pleasure. For a winter stay of three or four months there are parts of Ireland where a mild, genial and equable climate can be found. The southern coast of Cork and southwest of Kerry are specially favorable. Valentia Island has an average daily variation of 1.9° F., the south of England 2.7° F. The mean winter temperature of Queenstown is 44.21° F., Glengariff, 45.0° F.; Valentia, 44.9° F.; Blarney, 44.5° F. The mean annual temperature of these places and others in this district varies from 50° to 52° F. The rainfall, the chief objection to this district, is less at Queenstown than at Ventnor or Torquay, England. Glengariff, in a sheltered corner of Bantry bay, has an exceptionally mild climate in late winter and early spring, and an unusually large amount of daily sunshine during this time. Full facilities for boating, fishing and large interests for botanist or geologist can be found. Tender fruit trees and delicate flowering shrubs grown only under glass elsewhere, thrive here out of doors. Owing to the protection by hills only the warm south winds have access to Glengariff. It is a half day by rail from Queenstown to Bantry and thence a ten-mile stage ride over splendid roads to Glengariff. The three hotels are clean, very comfortable and well managed; with superb views of mountain and sea. English and Irish physicians agree in considering it has no equal as a winter and spring residence for pulmonary patients.

There are no extremes of temperatures, nor any cold east wind. The annual rainfall is 50 inches on some 230 days, but the ground dries quickly and most of the rain falls in late summer and autumn. Many delightful excursions are described by the author, all of which can be made in the month's trip. Blarney is on a dry, sandy soil, equable of temperature and only half an hour from Cork.

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(1) N. Y. Med. Jour., June 23, 1906.

Queenstown is mild and equable, completely protected from north and east winds, well drained, and has the least annual rainfall and greatest annual sunshine of any spot in Ireland. Bray is the "Irish Brighton," and Wicklow has near it the national hospital for consumptives. Dublin, near by, has a mean annual temperature of 49.5° F., mean annual rainfall of 28.31 inches on 195 rainy days; its relative humidity is 82.5 per cent. During the last ten years Ireland has awakened to hygienic requirements and the railways are no longer slow, dirty and uncertain, and the hotels are clean and well managed. In small places the old ways still prevail.

Manitou, Colorado. B. B. Creighton[1] sets forth in rather glowing terms the claims of Manitou, Colorado, as a health and bathing resort. A wealth of sunshine, a large number of clear days, a dry, pure atmosphere, an altitude of 6,300 feet, cool nights in the summer and warm days in the winter with an almost entire absence of dust and high winds are some of the valuable qualities. The drinking water is pure, there are carbonated springs of soda, sulphur and iron; all the modern necessities and luxuries of spa life, and every facility for hydrotherapy. Asthma, hay fever, incipient tuberculosis and fibroid phthisis are, he says, greatly benefited. Cold soda baths are, he says, especially stimulating and are used in neurasthenia, chorea, insomnia, hysteria and hypochondriasis, defective nutrition and general lack of nerve tone. The waters can be used internally and are beneficial used hot, in catarrh of the air passages, diabetes mellitus, chronic articular rheumatism, and many other chronic conditions. The Manitou water is very palatable for table and sick room use.

Oracle, Arizona. The summer climate of Oracle, Pina County, Arizona, is the subject of some notes by I. W. Brewer.[2] For those wintering in southern Arizona it is a question of great moment where to spend the summer. To reach Flagstaff and other places in northern Arizona, New Mexico and Colorado an expensive railroad trip must be made. The rule that any point in Arizona over 4,500 feet, if not shut in, will be comfortable, is a safe one. While

(1) Therapeutic Gazette, Nov. 15, 1906.
(2) Boston Med. and Surg. Jour., May 21, 1907.

the afternoon temperatures may pass 100° F. The air is dry, the shade pleasant, and nights are always cool and comfortable.

Oracle is 4,510 feet in altitude, and lies among the Santa Catalina foothills. The country is arid. There is little vegetation, but occasional large oak trees; the soil is porous and dries rapidly after rain. The Arcadia and Neal ranches at Oracle both make provision for tuberculous cases. There are cottages and tents for $10 per week and up. An abundance of good food, especially milk and eggs, is supplied. Tucson is 40 miles to the south and is reached in six hours by stage and in three by automobile.

	Mean.	Highest Mean.	Lowest Mean.	Maximum.	Minimum.	Mean Maximum.	Mean Minimum.	Mean Relative Humidity, Per cent.	Average Precipitation.	No. Rainy Days.	No. Clear Days.	No. Partly Cloudy Days.	No. Cloudy Days.
April	60	63	53	90	39	71	47	19	0.4	3	22	5	4
May	68	72	64	102	32	81	56	19	0.3	2	27	3	1
June	78	82	74	105	40	90	67	24	0.4	1	26	3	1
July	80	85	78	102	57	92	71	33	2.3	7	18	9	4
August	78	80	75	103	55	88	68	50	3.1	8	15	12	4
September ...	74	77	71	97	48	83	64	38	1.6	6	18	9	3

The mean temperature for the six months from April to September varies from 60° F. in April to 80° F. in July; August is a comfortable month, while June and July are both warm. The highest recorded temperature is 105° F. From 1901-1905, it rose above 100° F. on only three days. In July the daily maximum is liable to lie between 90° F. and 100° F. on 67 per cent. of the days. In August this falls to 37 per cent. The mean maximum reaches 71° F. in July, is below 60° F. in April and May, and above 60° F. in the other months. The relative humidity rarely reaches 50 per cent., during the summer months is usually below 40 per cent. The precipitation for the period amounts to 8.1 inches; nearly one-third of this falls in the summer. The rains are mostly short, sharp thunder storms in the afternoon, and cool the air very markedly. In the six months there average 27 rainy days, 68 per cent. of the days are clear, 22 per cent. partly cloudy and 10 per cent.

cloudy. While not so cool as Flagstaff, Oracle is desirable for those wintering in and about Tucson, who cannot make a long trip to a cool resort. The weather bureau statistics show a temperature difference of 8 to 12 degrees between Tucson and Oracle.

Southern California. H. L. F. Ziegel[1] writes on the medical climatology of Southern California. Because of its great latitudinal extent (800 miles) California has greater variation in scenery and climate than any other state of the Union. Central and Southern California differ almost as much in soil and climate as New York and Florida. Southern California is below 35° north latitude. It has a wet season from November to April, a dry one from May to October. Five kinds of local climates exist within comparatively short distances of each other. They all possess certain qualities in common: A wet and dry season, an average variation of temperature the year round at the same time of day of not more than 15 degrees. A large diurnal variation, and great variation between sun and shade. The coast resorts are always damp at night and often foggy. The large temperature range and the fog are the two chief objections. The advantages are: A large amount of sunshine, great variety in scenery and climate, moderate temperature, cultivability of soil, prosperous and sanitary towns.

The Mountain Climate. At 4,500 and more feet there are resorts having dry rarified air, dry soil, a large number of clear days and marked diurnal extremes of temperature.

The Foothill Climate. At 1,500 to 3,000 feet in altitude there is less fog and humidity and more sunshine than near the coast. The nearby mountains afford shelter from wind and in consequence lessen the diurnal range of temperature. [The author errs here both in facts and explanation. The diurnal range increases from ocean to mountains. Its cause is not wind but radiation, the blanket of moisture from the ocean prevents the latter process at the coast, but the inland dryness admits it freely with the resultant cool nights and warm days. The continuous sea breeze of the coast fails to make a large diurnal range.—Ed.]

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(1) N. Y. Med. Jour., Dec. 15, 1906.

The Desert Climate. While dry and equable these regions are hot, dusty, with much alkali and few conveniences. [The desert gives wider temperature variations, likewise due to radiation.—ED.]

The Coast Climate is totally objectionable, owing to fogs and humidity.

The Insular Climate, Santa Catalina offers much sunshine, equable temperature, considerable humidity and good sea air.

Southern California is favorable for asthma, only on account of its great diversity in a small area. For tuberculosis it offers sunshine, pure air, sanitary towns and chances of out-of-door work and diversion, good physicians and modern sanatoria. If altitude is desired Colorado is preferable since mountain resorts of California offer little or no occupation.

South Africa. G. F. Darker[1] writes on the South African climate: During the dry season, when the diurnal variation is greatest, the largest number of cases of illness occur. By clearing away brush, digging ditches for drainage, treating Europeans and natives with quinin daily the number is much reduced. February, March and April have an average diurnal variation of 17° F., then the sick Europeans average 6.3 per month. July, August and September have least variation, 8.26° F., the average Europeans sick are then 3.83 per month. This difference in temperature is caused by cloud and rain, which make the wet season more equable than the rest of the year. [It seems rather probable that some other factor or factors are active, rather than temperature range, since in many other places large diurnal range is not accompanied by any increase of sickness.—ED.]

CLIMATE AND HEALTH IN THE PHILIPPINES.

Disease in Manila. This subject is concisely reviewed by Paul G. Wooley[1], who does not believe climate to be directly responsible for the troubles incident to the tropics, but rather that lassitude and inactivity lead to habits far more harmful than climate. If a white man observes the

(1) British Med. Jour., April 6, 1907.
(2) N. Y. Med. Jour., Dec. 22, 1906.

usual rule of cleanliness in living, abstains from excesses, especially in alcohol, he may with an occasional visit to a cooler place in the hot months be as comfortable in Manila as elsewhere. Judicious exercise is a *sine qua non* of a healthy life in the tropical as in the temperate zone.

The general climatic conditions for four years are shown in a chart, curves of temperature, humidity, rainfall and number of rainy days being plotted. For 19 years the average mean temperature was 79° F., average maximum, 97.3° F.; average minimum, 63° F. The mean temperatures at Bagnio, Benquet, the summer capital, are 65.5° F., 88° F., 53° F., respectively. Like other oriental cities the ailments are cosmopolitan. Tuberculosis is a serious factor in the death list, lobar pneumonia is rare, but has been epidemic in the government prison. Gastrointestinal disorders are the most serious ills, amebic dysentery is the chief of these. It has three clinical forms; acute, usually a terminal stage of the chronic condition; subacute, the common form; chronic (often unsuspected). In either of the latter forms the acute stage may appear. Only after study of the intestines of the third form is the chronicity and terrible insidiousness of the disease realized. The ameba can readily be found after a brisk cathartic. Charts are made to show the monthly admission of soldiers for dysentery and diarrheic diseases between January 1, 1902, and December 1, 1905. The greatest number of cases occur in July, August and September, when the rainfall and number of rainy days are greatest. There are other parasitic diseases more or less frequent. With intestinal diseases, especially those which harm the mucous membrane seriously, there is a remarkable degree of atrophy, muscular atony and sore mouth (called sprue). Before the quinin treatment for amebic dysentery was instituted sprue was more frequently seen, and can be now in those not having proper care. It is in the author's opinion not a disease, but a condition caused by chronic intestinal disease. Abscess of the liver is less frequent now, but does accompany or follow amebiasis; it occurs in Filipinos and Japanese as well as in whites. Recently Musgrave has found amebæ in the circulating blood and has collected them from it, so broadening our view of the disease. Plague is endemic in

Manila; every month or so shows a case. The causes are the conditions of the houses of the laborers and Chinese, the exposure of their feet and legs to trauma and their carelessness in regard to lesions. Fleas, bed bugs, etc., may assist in the spread of plague. The author considers plague septicemia more common than Herzog does. Cholera is also endemic, becoming occasionally epidemic. Many cases probably escape recognition because the bodies of those dying on the cascoes and lorchas on the river are often thrown overboard, and found too late for diagnosis; but few white people suffer from cholera (also true of the plague). Beriberi causes a fairly constant death rate among natives, the author never saw an American affected, though a case is recorded. Malaria is very common among natives in a latent form, but not in its typical aspect; there are abundant mosquitoes and it is surprising that there are not more clear cases. Besides the tertian, quartan and estivoautumnal types, there is a mild form showing the small, spindle-shaped motile intra- and extracorpuscular bodies described by Smith, Bloombergh and Coffin. As a rule this yields readily to quinin, occasionally it is resistant. Dengue is frequent, often epidemic. Stitt, in Cavite, reports that a differential leucocyte count may be valuable in diagnosis, a large increase of small, then large lymphocytes, finally mononuclears occurs. Leucopenia is the rule and decreased polymorphonuclears. Stitt believes that mosquitoes play an important rôle in the transmission of the disease. Skin diseases are frequent, Dhobie itch is extremely common; leprosy is widespread, yaws, lichen ruber, lupus, phagedena and various tropical sores occur.

Relation of Climate and Health. The relation between climate and health in the Philippines is fully discussed by W. S. Washburn.(1) These islands are covered with vegetation, have varied altitude, every 300 feet averaging a difference of 1 degree in temperature, are subject to *baguios* or hurricanes, show a wet and dry season and have a general climate, both insular and oceanic, 60 miles being the greatest distance it is possible to be from the sea. April, May and June have the greatest heat. During these months the northern part of the island of Panay and throughout the island of Luzon, excepting the highlands and a part of the provinces of Pampanga, Bulacan, Rizal and Bataan, the mean temperature is 87° F. In the other parts of Luzon including Manila and the islands of Romblon and Cebu, the peninsula of Zamboanga and the west coasts of Samar, Negros, Panay and Bohol, the mean temperature for the same time is 83° F., while the Sulu Archipelago, in the extreme southeast of Luzon only 80° F. is reached. By including readings for the elevated parts of these regions the averages would be considerably reduced. The mean temperature for the remaining part of the year at or near sea level is 80° F. Some parts have a rainy season beginning in June, excessive in July, August and September, decreasing in November; others have a more even rainfall. Parts of the eastern coast of northern Luzon and the interior of Luzon above 4,000 feet, the Pacific side of the archipelago, have over 100 inches annually; in other parts, including Manila, it is less, being only 35 inches at Lamboanga.

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(1) Philippine Jour. Med. Sciences, September, 1905.

Bagino, Luzon, has an altitude of 4,777 feet, low average temperature and humidity during March, April, May and June, owing to the winds from the China Sea, from November to June the climate here is ideal. The country is rolling table land, well watered and forested. Observations for from two to three years give the following results: Mean yearly temperature, 65.48° F. (lowest February, 60.98° F.; highest April, 68° F.); mean maximum yearly, 76.82°, (lowest February, 73.94° F.; highest April, 80.24° F.); mean minimum yearly, 53.24° F. (lowest February, 45.68° F.; highest June, 58° F.); humidity, annual mean, 83 per cent. (lowest April, 75.5 per cent.; highest August, 92.2 per cent); yearly rainfall, 117.84 inches (least, February, 0.21; greatest, August, 42.89); rainy days, 177 (fewest, February 1; most, August 31).

Manila is intermediate with the mean annual temperature of 80° F.; humidity, 79 per cent.; rainfall of 76 inches. The rain is distributed in the months about as in the highlands. The relative humidity is less during the hot season, greater during the cool rainy season.

The last published report of the board of health in Manila, September, 1902-1903, gives the following figures for death rate: Filipinos, 43.42 per 1,000; Chinese, 28.26 per 1,000; foreigners, 18.72 per 1,000; Americans, 14.80

per cent; excluding cholera the death rate for the latter was only 3.83 per cent. Evidence is accumulating to show that the mortality of the whites in the tropics is less than that of the natives. The general mortality decreased from 39.66 per 1,000 of population in 1900 to 29.45 in 1903. For Americans it was 3.83 for the first period and 1.82 for the year ending August 31, 1904. The American population does not, however, contain the usual number of old and young, and some returned to the United States on account of illness. Infant death rate among natives is excessive, due to lack of care and food. Yellow fever is not serious in the Philippines and Asiatic cholera is non-existant. Better domestic hygiene reduces dysentery and other intestinal diseases. Bubonic plague can be controlled, though it is an extremely fatal disease. Enteric fever and pneumonia are rare, tuberculosis less frequent than in the United States. The construction of the houses in the tropics is an important factor in health. Sleeping rooms should be as high as practicable above ground, there must be a proper sewerage system, good drainage, tight floors and thorough ventilation; lawns and flower gardens should also be kept up to soften the intense light. Water supply must be good to avoid the frequent use of alcoholic drinks common in the tropics. The habit does great harm, and investigations show that white people addicted to alcohol cannot settle tropical countries.

Lack of physical exercise common in these regions also leads to abnormal functioning of the body. The climate in the author's opinion is not so much responsible for physical breakdown as are the irregular, intemperate habits frequently indulged in by newcomers. It requires more determination and sanity to live suitably than it does in temperate zones, and the punishment for violating sanitary and personal health regulations is apt to be severe and prompt.

[Any comparison by figures of the death rates, etc., would seem to be misleading, since the Americans going to the islands must be largely a picked class and not representative of the average health or resistance of the race. Figures obtained from army reports do not represent fairly general life conditions, either favorable or the reverse.—ED.]

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